Rock Products

DEVOTED TO

Concrete and Manufactured Building Materials

Vol. VII. CHICAGO, ILL., APRIL 22, 1908. No. 10.

CAROLINA PORTLAND CEMENT COMPANY

We are the largest distributers of Portland Cement, Lime Plaster, Fire-brick and General Building Material in the Southern States, and have stocks of Standard Brands at all of the Atlantic and Gulf Seaports, and at our interior mills and warehouses, for prompt and economical distribution to all Southern territory. Write for our delivered prices anywhere. Also Southern agents for the "Dehydratine's" waterproofing material. "Universal," "Aeme" and "Electroid" Brands Ready Roofing. Get our prices.

Charleston, S. C. Birmingham, Ala. Atlanta, Ga. New Orleans, La.

DEXTER Portland Cement THE NEW STANDARD

Sole Agents SAMUEL H. FRENCH & CO. Philadelphia

UNION MINING COMPANY

Manufacturers of the Celebrated

MOUNT SAVAGE FIRE BRICK

GOVERNMENT STANDARD.

DEVOTE a special department to the manufacture of Brick particularly adapted both physically and chemically to

Lime Kiln and Cement Kiln Construction

Large stock carried. Prompt shipments made. Write for quotations on Standard and Special shapes, to

UNION MINING CO.,
Mount Savage, Md.

CAPACITY, 60,000 PER DAY. ESTABLISHED 1841.

MEACHAM & WRIGHT COMPANY

CEMENT

CHICAGO

Phoenix Portland Cement UNEXCELLED FOR ALL USES.

Manufactured by

PHOENIX CEMENT CO.

NAZARETH, PA.

Sole Selling Agent WM. G. HARTRANFT CEMENT CO.,
Real Estate Trust Building PHILADELPHIA, PENNSYLVANIA

Vulcan Steam Shovels

Are digging Cement Rock without blasting and loading it on cars for the Burt Portland Cement Co. of Bellevue, Mich., for less than 12 cents per cubic yard and they are operating the shovels at only half capacity. How much is it costing YOU? Better write today for information.

The Vulcan Steam Shovel Company 129 Vulcan Place, Toledo, Ohio

Ottawa Silica Co.'s Washed White Flint Sand

Is used for sawing stone in more than a dozen states. Cuts more and lasts longer than any other sand on the market. Unexcelled for Roofing, Facing Cement Blocks, White Plaster, etc. Freight rates and prices on application.

OTTAWA SILICA CO., . . Ottawa, Ill.

"RELIANCE" BELT ABSOLUTELY BEST

FOR GRIFFEN MILLS
FOR TUBE MILLS
FOR BALL MILLS

Chicago Belting Company

MAKERS

67-69 South Canal Street SEND US YOUR SPECIFICATIONS CHICAGO, ILLINOIS

ALMA
Portland Cement

STANDARD BRAND OF MIDDLE WEST.

Specially adapted to all Reinforced Concrete and High-Class Work.

Alma Cement Co.
WELLSTON, OHIO.

Special Features in This Number.

Building Season Opens Auspiciously.
The Indianapolis Board of Trade Building.
New Municipal Building, Seattle.
The Great Pure-Water Plant at New Orleans.
Portland Cement Manufacturers at Philadelphia.
Engineering Club of the National Lime Manufacturers' Association.
Concrete Structural Tile Wins in the Market.

If your story is a short one, you can reach thousands in this space. : :

A PERFECT RECORD FOR TEN YEARS

IN ALL KINDS OF CONCRETE WORK

Send for 72 page Illustrated Catalog No. 25

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PENINSULAR PORTLAND CEMENT JACKSON, MICH.

TRADE-MARK

Acknowledged by competent Architects and Engineers to be unequaled for fineness, wonderful development of strength and sand carrying capacity.

"THE BEST IS THE CHEAPEST"

Address
Peninsular Portland Cement Co.
Jackson, Michigan

"The Best is None too Good"

NORTHWESTERN STATES PORTLAND CEMENT CO. MASON CITY, IA.

HIGHEST GRADE of Portland Cement

Every Barrel Absolutely Uniform.

R. R. facilities especially adapted for prompt shipments in the northwest.

Capacity 1,500,000 bbls. Yearly.

Gorham System

NORTHWESTERN STATES PORTLAND CEMENT COMPANY
MASON CITY, IOWA.

"LEHIGH" PORTLAND CEMENT

LEHIGH PORTLAND CEMENT COMPANY ALLENTOWN, PA.

High Tensile Strength, Finely Ground, Light and Uniform in Color.

MANUFACTURED BY THE

Lehigh Portland Cement Co.

ALLENTOWN, PA

Western Office:
725 Rockefeller Bldg.,
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Write for Catalogue.

Capacity, 8,000,000 Yearly.

ST. LOUIS PORTLAND CEMENT COMPANY. RED RING ST. LOUIS. BRAND

Manufacturers: Sales Office, Holland Bldg. St. Louis.

Buckeye Portland Cement Co

ESTABLISHED 1888.

Manufacturers of the celebrated "Buckeye" brand of

UNEQUALLED BUCKEYE Portland CEMENT BELLEFONTAINE, O.

TRADE MARK.

Portland Cement

"Buckeye" has stood the wear and tear in many important places for the past fifteen years and under the new process of manufacture is now better than ever.

WE INVITE YOUR CORRESPONDENCE.

Bellefontaine, Ohio.

ONE GRADE—ONE BRAND

ALPHA PORTLAND CEMENT COMPANY. PORTLAND CEMENT. MANUFACTURERS.

Alpha Portland Cement

The Recognized Standard American Brand

General Offices: EASTON, PA.

SALES OFFICES:

German National Bk. Bldg., PITTSBURGH.
Builders Exchange, BALTIMORE.
Marquette Building, CHICAGO.
Harrison Building, PHILADELPHIA
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CHICAGO PORTLAND CEMENT COMPANY. CHICAGO PORTLAND CEMENT CHICAGO ILL.

CHICAGO "AA"

1,000,000 Barrels Annually

THE LEADING SIDEWALK CEMENT

Factory at Oglesby, near La Salle, Ill., on C. M. & St. P. R. R., C. B. & Q. R. R., I. C. R. R., and C. R. I. & P. R. R., by Switch.

WE MAKE ONE BRAND ONLY. THE BEST THAT CAN BE MADE.

Used in the large bridges at Thebes and Kankakee, Illinois, Hennepin Canal, Government Post Offices, Locks and Bridges, Chicago Tunnels; and by principal Railroads, Engineers, Architects, Contractors and Block Manufacturers.

CHICAGO PORTLAND CEMENT CO.

No. 108 La Salle Street, CHICAGO, ILL.

HYDRATED PORTLAND LIME

CHICKAMAUGA CEMENT CO. HYDRATED PORTLAND LIME SOLE MANUFACTURERS CHATTANOOGA, TENN. U.S.A.

IS IDEAL FOR

Waterproofing Concrete Blocks

SAVES MONEY. TRY IT.

FOR INFORMATION AND PRICES, WRITE

CHICKAMAUGA CEMENT CO.,

Sole Manufacturers. CHATTANOOGA, TENNESSEE

Rock Products

DEVOTED TO

Concrete and Manufactured Building Materials

Volume VII. CHICAGO, ILL., APRIL 22, 1908. Number 10.

INDIANAPOLIS BOARD OF TRADE.

Splendid Example of the Highest Type of Modern Office Buildings.

Among recent examples of modern construction of all-reinforced concrete building there is no more conspicuous or attractive illustration than the new Board of Trade Building at Indianapolis, Indiana. This structure has a very prominent location, situated as it is at the southeast corner of Meridian and Ohio Streets, opposite the Indianapolis Public Library and the New Federal Building. Its general appearance is very clearly shown by the illustration on another page, and is a credit to the architect, W. K. Eldridge, who has kindly given the following description of the architectural finish:

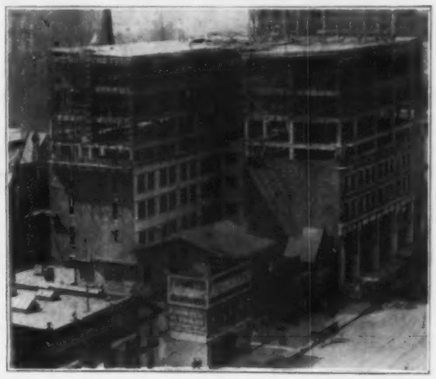
The two lower stories are faced with Bedford limestone from the quarries of the Perry-Mathews-Buskirk Company, beautifully carved and set by G. Ittenbach & Co., of Indianapolis. Above the third story sill course the three main fronts are inclosed with brick curtain walls faced with dark red pressed shale bricks, all

2. PROGRESS OF CONSTRUCTION.

openings trimmed with white terra cotta by the Indianapolis Terra Cotta Company, the whole surmounted by a natural copper cornice with brackets and cresting. The interior court walls are faced with Tiffany enameled bricks. There is no exposed woodwork on the exterior, the second floor spandrels being faced with copper, the show-window bases and second story mullions of cast iron, and even the entrance and store doors being faced on the outside with boiler plate.

The two entrance halls, from Meridian and Ohio Streets, respectively, meet at a bank of three Otis electric elevators, enclosed in ornamental iron grilles by Walter Kamman of Cincinnati. The Meridian Street vestibule is decorated with mosaic panels on each side, representing "Commerce" and "Industry," which are much admired. Both entrance halls and central lobby have floors of Athens stone, and the walls are faced with white Italian marble by H. Marthens of Chicago. The elliptical marble stairway with mosaic soffit, a very intricate and difficult piece of work, was especially well executed, and stands entirely free from the wall. Besides the shops and stores on the first floor, the rear of the building is occupied by

1. ERECTING THE FORMS.



3. FINISHING THE CONCRETE WORK.

4. REAR VIEW OF STRUCTURE.

an elaborately fitted buffet and a handsome twelve-table billiard hall. Each room on the first floor has an inside entrance from the lobby.

All the corridors on the upper floors have ceramic tile floors by the United States Encaustic Tile Company, and are wainscoted with gray Knoxville marble; also, the respective toilet rooms. The offices on each floor are trimmed with dark oak and equipped with oak wardrobes and lavatory enclosures, each wardrobe door having a mirror in the upper panel. Fireproof vaults were put in for such tenants as desired them.

A handsome tile-floored barber shop with walls of Italian marble and plate-glass mirrors occupies a portion of the second floor.

The plumbing is of the latest design and most sanitary type, installed by Foley Brothers, using push button fixtures from the Federal Company of Chicago. The Van Auken vacuum heating system was in-

5. TYPICAL DETAILS OF CONSTRUCTION.

stalled by Woolen & Callon, and the electric and telephone conduits and wiring by the Sanborn-Marsh Electric Company. Each office has at least two plug outlets in the wall for desk lights, besides the usual electroliers, and each of the city telephone companies has a wire terminating in a wall cabinet in each room. The Western Union Telegraph Company also maintains a branch office in the building. The best grade of modern office hardware from the Yale & Towne Company was used.

Every little detail, such as the Cutler mail chute, electric clocks, private telegraph for Board of Trade members, etc., has been installed for the comfort and convenience of the tenants.

The entire seventh floor is devoted to Board of Trade uses, and on this floor will be found a large auditorium occupying the height of two stories, and a large room for the Board of Governors which may be

Continued on page 43.

Can Be Used With Absolute Safety

Hundreds of users have testified to the excellent results obtained.

Manufactured and Guaranteed by

Omega Portland Cement Company

Jonesville, Michigan

Strength
Uniformity
Satisfaction

A Dependable Portland Cement

An Unblemished Record for six years speaks for itself

Wolverine Portland Cement Company
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C. H. WOOD, Agent, Chamber of Commerce Building, Chicago

CAPACITY 700,000 BARRELS ANNUALLY

OFFICE ALLENTOWN, PA.

STANDARD SPECIFICATIONS GUARANTEED

Newaygo Portland Cement Co.

Sales Office: Michigan Trust Building

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Write us for prices. Send us your orders.

WHY?

Egyptian Portland Cement

Every mason likes it.
Works easy.
Excellent color.
High in tensile strength.
Fine ground.
Mill centrally located.
Low freight rates.
Popular price.

We can save you money — Write us your needs

THE BARTLETT CO.

Mills: Fenton, Mich. — Sales Office, Jackson, Mich.

Ask for Information Regarding

"SUPERIOR"

Before you buy your Cement for 1908.

Every Barrel gives entire satisfaction.

Write Us for Prices and Tests

Guaranteed to meet the requirements of "Standard Specifications."

The Superior Portland Cement Co.

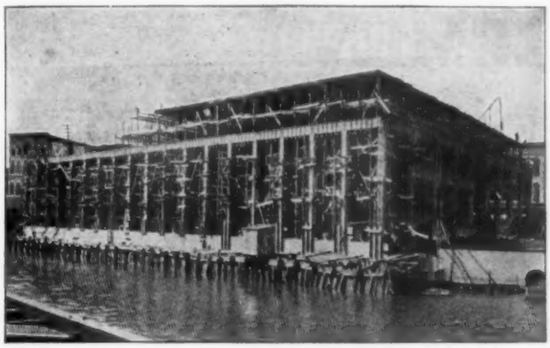
Works:
Superior, Lawrence Co., Ohio.
Detroit, Toledo & Ironton Ry., within switching distance of
C. & O. and N. & W. Rys.

General Offices and Sales Dept.,
Charleston, W. Va.

Medusa Water-Proof Compound

Makes all Concrete Watertight

The foundations and floor in basement, all of cement, in the Bostwick-Braun warehouse, Toledo, O., here illustrated, contain Medusa. Write for pamphlet describing its use.



Write for samples of our Pure White Portland Cement.

Do not accept a substitute, as there are many adulterated compounds on the market.

Sandusky Portland Cement Co.

SANDUSKY, OHIO

Eminent authorities all agree that the finer the clinker is ground, the better the cement

It costs more to grind 10 per cent finer, but—

"We Don't Care!"

"FINENESS: The finer a cement is ground, the better its quality. Water acts only on the finer particles, while the coarser particles are almost always inert. The finer a cement is ground the greater will be its covering capacity, therefore the greater its value as a cementing material. To produce the greatest strength each particle of the aggregate should be covered with cementing material. The greatest economy, other things being equal, will result when the cement is as fine as possible. **However, while fine cement is more valuable than coarse, fine grinding increases the cost of manufacture,** hence there is a limit to the amount of grinding which can be done economically. Again, a finely ground cement is less apt to blow or disintergrate than a coarse one, since the free or loosely combined lime being in fine particles is thoroughly broken up and readily rendered innocuous by the water when it is added."

H. A. REID, Assoc. M. Am. Soc. C. E.
Ass't Engineer Bureau of Buildings, N. Y. City, in "Concrete and Re-inforced Concrete Construction"

EDISON PORTLAND CEMENT CO.

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Philadelphia, Arcade Bldg. Newark, N. J., Union Bldg.
Boston, Post Office Square Bldg. Savannah, Ga., Nat'l Bank Bldg.

Strength Durability Permanence

Not only laboratory tests, but results in actual work prove the high grade quality of

Northampton Portland Cement

Especially adapted for Cement Blocks, Sidewalks and all forms of concrete and re-inforced concrete construction.

Northampton Portland Cement Co.

Main Office and Works

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Concrete Block Residence

of E. S. Harkness, Goshen, New London, Ct.

Architects, Lord & Hewlitt, New York

Contractor, F. M. Ladd, New London

NAZARETH Portland Cement with 10% Limoid for waterproofing used throughout this construction.

CHARLES WARNER CO., PHILADELPHIA, PA. WILMINGTON, DEL. NEW YORK CITY, N.Y.

The Quality that Never Fails

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PORTLAND CEMENT

Three Great Plants, at IOLA and INDEPENDENCE, KANSAS, making Perfect Cement, with Unsurpassed Shipping Facilities, Guarantee Prompt Service.

YOUR CEMENT NEEDS CAN BE SUPPLIED EFFICIENTLY

Daily Capacity of 8,000 Barrels. Write today to

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General Sales Office: 811 Commerce Building, KANSAS CITY, MO.

Flint Pebbles and Buhr Stone Linings.

French Buhr Mill Stones, Solids and Built.

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Sole Agent.

59 Pearl St.. NEW YORK, N. Y.

Bolting Cloths, Dufour Swiss Silk, Fine Wire Cloth.

Mixing and Sifting Machinery.

"If it is **BAGS** We make them"

FOR LIME, CEMENT PLASTER AND FEED

IN VALVE OR OPEN MOUTH

The Urschel-Bates Valve Bag Co.

TOLEDO, OHIO

PENNSYLVANIA CEMENT COMPANY PORTLAND PENNSYLVANIA CEMENT 26 CORTLANDT ST. N.Y.

Pennsylvania Portland

Stands for Quality

PENNSYLVANIA CEMENT COMPANY PORTLAND PENNSYLVANIA CEMENT 26 CORTLANDT ST. N.Y.

Tell 'em you saw it in ROCK PRODUCTS.

The Ironton Portland Cement Co.

Manufacturers of the

Celebrated Limestone Brand of Portland Cement

Used by the Railroads in Kentucky, Ohio, West Virginia, and Virginia during the past five years.

Cement as finely ground as any on the market.

Guaranteed to pass all the standard specifications.

Plant located at Ironton, O., within easy access to seven States, namely, Ohio, Indiana, Kentucky, West Virginia, Virginia, Tennessee and North Carolina.

Shipments via the N. & W. Ry., C. & O. Ry., C. H. & D. Ry., D. T. & I. Ry. or Ohio River. **Write for Prices**

The Ironton Portland Cement Co.

Ironton, Ohio

FOWLER & PAY,

Brown Hydraulic Lime, Austin Hydraulic Cement, Jasper Wall Plaster, Brick, Stone.

CEMENT WORKS: Austin, Minn.
PLASTER MILL: Ft. Dodge, Iowa.
WAREHOUSE: Minnesota Transfer.

MANKATO, MINN.

Ash Grove Lime and Portland Cement Company

Manufacturers of

HIGH GRADE LIME AND PORTLAND CEMENT

R. A. Long Building.

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CASTALIA PORTLAND CEMENT CO.

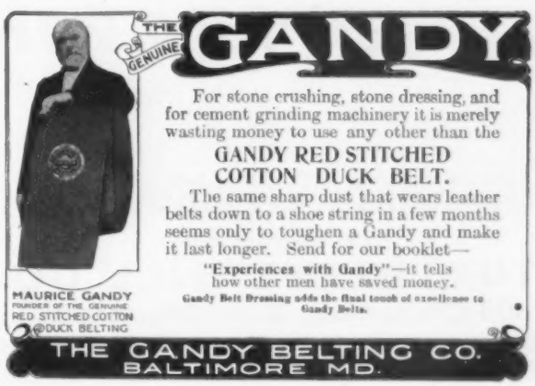
PITTSBURG, PA.

PLANT:
CASTALIA, ERIE CO., OHIO.

CAPACITY:
2,000 BARRELS DAILY.

CHARLES L. JOHNSON, Sales Mgr.
CASTALIA, OHIO

High Tensile Strength
Light Uniform Color
Finely Ground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GANDY
For stone crushing, stone dressing, and for cement grinding machinery it is merely wasting money to use any other than the
GANDY RED STITCHED COTTON DUCK BELT.
The same sharp dust that wears leather belts down to a shoe string in a few months seems only to toughen a Gandy and make it last longer. Send for our booklet—
"Experiences with Gandy"—it tells how other men have saved money.
Gandy Belt Dressing adds the final touch of excellence to Gandy Belts.
MAURICE GANDY
FOUNDER OF THE GENUINE RED STITCHED COTTON DUCK BELTING
THE GANDY BELTING CO.
BALTIMORE MD.

"KOSMOS"

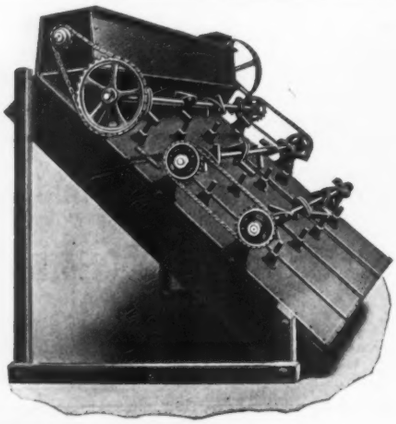
Kosmos Portland Cement is the product of a model plant, using high grade raw materials and under the direction of a staff of experienced cement engineers.

It is guaranteed the equal of any American Brand of Portland Cement and will be found to run uniform in color, strength and fineness. It is suitable for any class of work and is especially recommended where the requirements are exacting.

Manufactured by the

Kosmos Portland Cement Co., Inc.

BUSINESS OFFICE: 614-616 Paul Jones Bldg., Louisville, Ky. **WORKS: Kosmosdale, Jefferson Co., Ky.**



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INCLINED VIBRATING SCREEN

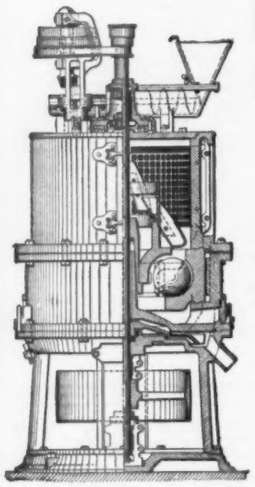
THE ONLY SHAKING SCREEN
THAT WILL NOT SHAKE
ITSELF TO PIECES

SCREENS FROM ½ Inch TO 200 Mesh ACCURATELY

SEND FOR CATALOGUE

STURTEVANT MILL CO.

105 Clayton St., BOSTON, MASS.



Fuller-Lehigh Pulverizer Mill

The Best Pulverizing Mill Manufactured

Exhaustive tests in all departments, in competition with the most approved grinding machines in use, have demonstrated the superiority of our machine.

OUR CLAIMS:

Greater Output
Better Fineness
Fewer Repairs
Dustless

Few extracts from letters received from users

"With the four we are now ordering we will have in use 16 Fuller Mills in all, and I think you can hope to get orders from us within the very near future for quite as many more."

"We have to say for your Fuller Mill that it is unqualifiedly the best grinding device we have ever tried on our lime rock and eminently satisfactory to us."

"We are pulverizing with one Ball Mill and four Fuller Mills sufficient raw material to produce nearly 1200 barrels of clinkers per day, which record I believe can not be approached by any other mill on the market."

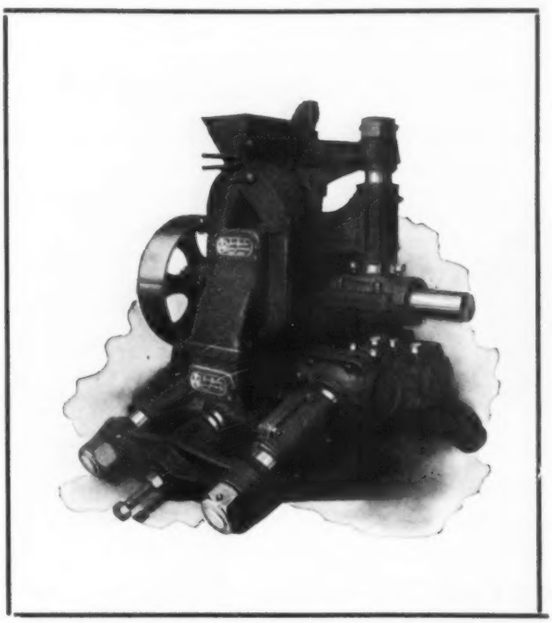
If interested, write us for further information

Lehigh Car, Wheel & Axle Works

Main Office—Catasauqua, Pa., U. S. A.

New York, 111 Broadway — Kansas City, Mo., Scarritt Building

THE KENT PULVERIZER



Takes one inch feed. Grinds to any fineness from 10 to 200 mesh.

GRINDS PER HOUR WITH LESS THAN 25 H. P.

CEMENT CLINKER,	40 bbls. to 98%	20 Mesh.	
CEMENT CLINKER,	12 " "	96% 100	"
		83% 200	"
LIMESTONE,	2½ tons to 98%	200	"
LIME,	4 " " "	100	"
ROSENDALE CEMENT,	43 bbls. " 90%	50	"
QUARTZ TRAP-ROCK,	4 tons " "	40	"

You can easily figure from this what a Kent Mill would save for you.

W. J. BELL, Esq. Supt.
NEWAYGO PORTLAND CEMENT CO.,
Newaygo, Mich.
Says:—Four KENT MILLS are driven by one 75 H.P. motor

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170 Broadway, **NEW YORK.**

"THE QUARRYMAN FINDS A NEW STANDARD OF QUALITY IN INDEPENDENT"
INDEPENDENT POWDER
COMPANY OF MISSOURI
HOME OFFICE · JOPLIN · MO ·
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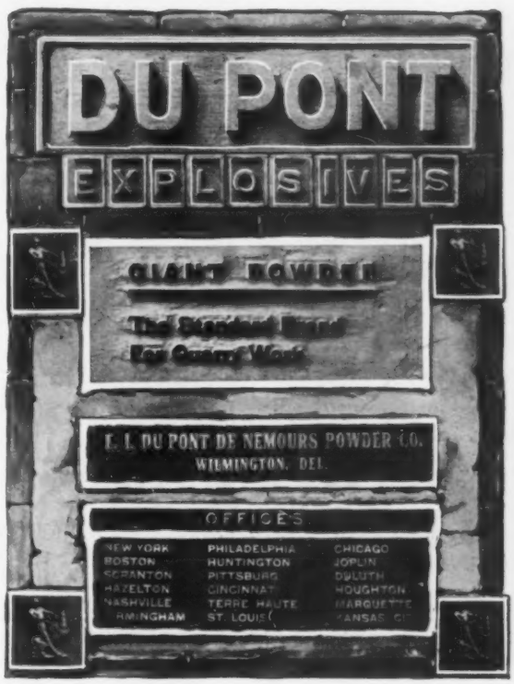

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The Standard Explosive
Always Full Strength
Always the Same

Send for new 66 page Blasting Manual

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"TAYLOR MADE"

Trade TISCO Mark

MANGANESE STEEL

FOR

COMBINED HARDNESS, TOUGHNESS
AND HIGH TENSILE STRENGTH

—— ITS APPLICATIONS ——

Crusher Linings, Jaw Plates, Cheek Plates, Cones, Concaves.

Power Conveying Parts,—Gears, Sprockets, Sheaves, Detachable Link Belting.

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The "Panama" Two-Part Dipper Tooth for Steam Shovels and Dredges.

"TAYLOR-MADE"

Castings for parts that receive the shock—which MUST be machined.

"THE REASONS IN THE STEEL."

It will pay you to review our complete Catalog and literature—Your request will have very prmopt attention—WRITE US TODAY.

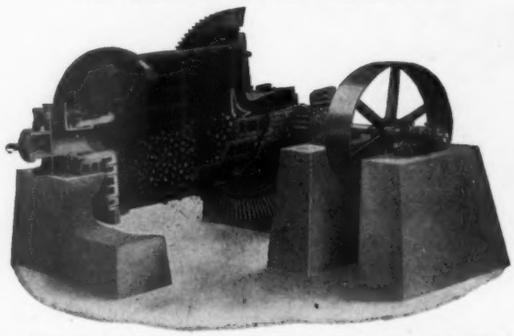
TAYLOR IRON and STEEL CO.

High Bridge, N. J.

Cement Mill Machinery

FOR EITHER WET OR DRY METHOD OF MANUFACTURE

CRUSHERS—DRYERS—KILNS—COOLERS
TUBE MILLS—BALL TUBE MILLS, ETC.



Our Ball-Tube Mill shown above is a distinct innovation in the line of cement-making machinery, and is timed to entirely replace the old-time ball mill for the coarse grinding of cement clinker, because of its much greater grinding capacity per horse-power and the extremely low cost for repairs.

NO SCREENS TO CLOG OR WEAR OUT
THEREFORE NO SHUT-DOWNS

Our entire line of Cement Mill Machinery is distinctive in character and design and is acknowledged by discerning engineers to be superior to any other on the market.

Our new Catalog No. 7 gives full and complete details. Send for it.

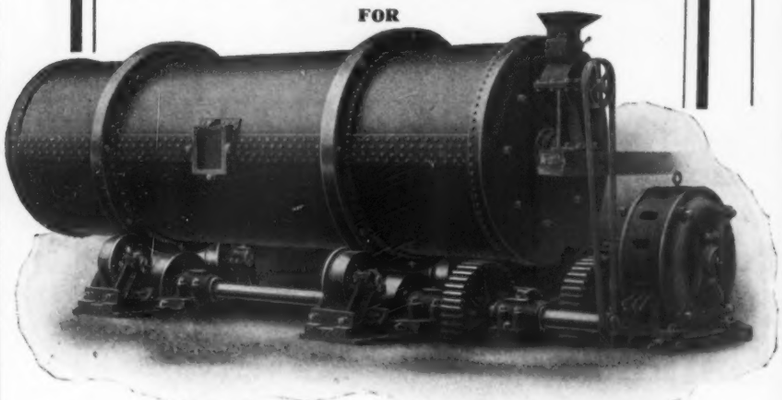
POWER AND MINING MACHINERY COMPANY

CUDAHY (Suburb of Milwaukee) WISCONSIN

MEXICO CITY, CHICAGO, EL PASO, NEW YORK, SALT LAKE, SAN FRANCISCO.

TUBE MILLS

FOR



Ores, Minerals, Chemicals, Cement, Etc.

A saving of 30 per cent in power over any other tube mill is guaranteed by the use of our tube mills

J. R. Alsing Engineering Co.

Incorporated 1885 R. F. ABBE, Pres't Founded 1869

136 Liberty Street, New York

WESTERN REPRESENTATIVE:
MR. C. VAN DEVENTER, Chicago, Ill.

RAW MATERIAL GRINDERS

New Williams Universal

FOR TUBE MILL FEED

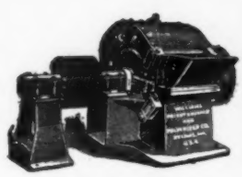
800 BARRELS 22 HOURS
95 PER CENT THROUGH 20 MESH
HORSE POWER 40 TO 50

WE ALSO GRIND
GYPSUM, LIME, COAL AND SHALE

Vulcanite Grinder

FOR ROLLER MILL FEED
TAKES MATERIAL FROM
GYRATORY, DIRECT

CAPACITY 20 TONS HOUR
FINENESS ½ IN., ¼ IN. AND ⅛ IN.
HORSE POWER 30 TO 35
1,200 MILLS NOW IN USE



WRITE FOR BULLETIN NO. 12

WORKS:
ST. LOUIS, MO.

The

SALES OFFICE:
OLD COLONY BLDG.
CHICAGO

Williams Pat. Crusher & Pulverizer Co.

CHARLES W. GOETZ LIME & CEMENT CO.

MANUFACTURERS OF AND DEALERS IN

Glenwood Lime, Banner Brand Louisville Cement, Portland Cements and Building Materials.

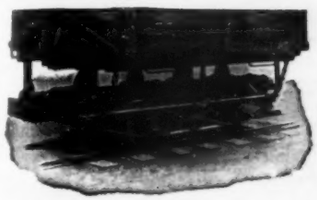
St. Louis, Mo.

ROCKLAND-ROCKPORT LIME

The sand capacity is immense. Produces a rich mortar with great spreading qualities. A saving of labor and material. Sold by all the best building material dealers.

ROCKLAND-ROCKPORT LIME CO.

FULLER BLDG., NEW YORK.



"CONTINENTAL" DUMP CARS

Our Dump Cars are used on most of the large rock and dirt moving operations throughout the United States and Canada.

Continental Car and Equipment Co.

Works; Highland Park, Louisville, Ky. New York, 17 Battery Place

CONTINENTAL

Farnam "Cheshire" Lime Co.

OF CHESHIRE, MASS.

MANUFACTURERS OF THE

Celebrated "Cheshire" Finishing Lime.

Well known throughout New York and the Eastern States as the finest finishing lime manufactured. The special feature of this lime is its quick and even slacking, thus preventing any cracking or checking when put on the wall. It is the best lime used in the country today for all

HIGH GRADE FINISHING WORK

Selling Department, 39 Cortlandt St., N. Y., C. J. CURTIN, Pres't.

THE OHIO AND WESTERN LIME CO.

HUNTINGTON, INDIANA

MANUFACTURERS OF

LUMP LIME

ALSO, DIAMOND BRAND SUPERIOR WHITE FINISH

A HYDRATED LIME

AND A GROUND AND FERTILIZER LIME

Capacity 4,000 barrels or 10,000 bushels per day. Capacity of Hydrated Lime, 120 tons per day. Our LUMP LIME as well as our HYDRATED LIME is the very best obtainable for all purposes for which a good lime is needed in erecting buildings. Our HYDRATED LIME is absolutely the best finishing lime on the market.

The Hoosac Valley Lime & Marble Co.

ADAMS, MASS.

Manufacturers of

....High-Grade Finishing Lime....

Noted For Its Quick and Even Slacking.

Now in Use in Some of the Largest Buildings Being Erected in New York City.

THOS. D. CONNORS, President. Telephone Connection New York Office: 1123 Broadway.

PURE CALCIUM HYDRATE

The Best for Every Purpose where Chemically Pure Lime Is the Indispensable Element.

Sand-Lime Brick Difficulties can be Simplified and Overcome by the use of Correctly Hydrated Lime.

We offer the EXACTLY RIGHT article

MARBLEHEAD LIME COMPANY

Chicago - - Kansas City

Testimonials from Practical Experts Endorse Our Hydrate

WE MAKE THE LARGEST

as well as the smallest gears. Our equipment is designed to turn out any kind and any size of gear in the shortest possible time.

If in a hurry, wire us.

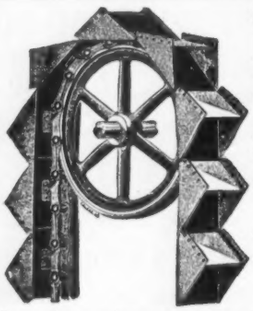
R. D. Nuttall Co.
PITTSBURG, PA.

HIGH GRADE
FIRE BRICK
For Cement Works, Lime Kilns, Cupolas, Steel and Iron Works of every description. :: :: :: ::

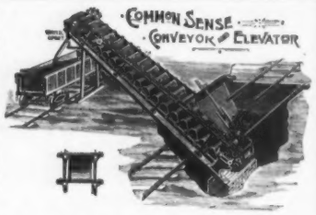
Louisville Fire Brick Works, K. B. GRAHN, Prop., Highland Park, Ky., P. O.

Hand Made ═══ Hard Burnt
FIRE BRICK
—are the best for—
Lime and Cement Kilns

ADDRESS
Mitchell Clay Mfg. Co.
ALL SHAPES St. Louis, Mo. CATALOG



Send for Catalog 25



THE GENERAL CRUSHED STONE CO.,
So. Bethlehem, Pennsylvania,
have been using one of our Common Sense Elevators for six years—capacity 400 tons an hour.

THE C. O. BARTLETT & SNOW CO. CLEVELAND, OHIO.

The Buckeye Fire Clay Co.
Manufacturers of
Sewer Pipe, Flue Linings, Chimney Tops, Fire Brick, Grate Tile, Ground Fire Clay, Wall Coping, Etc.
UHRICHSVILLE, .. OHIO

CEMENT-KILNS
Lined with Our BAUXITE Lining Blocks

In hot zone and our special fire-clay blocks throughout the rest of Kiln can be run from three to four times as long as Kilns lined with the very best fire-clay linings. Write for booklet describing Bauxite Linings for Portland Cement Rotary Kilns.

Fire-Brick for Lime Kilns

We number among our customers many of the large Lime and Gypsum Manufacturers of the Country.

Sewer Pipe, Wall Coping, Hollow Tile Fire Proofing, Flue Lining.

Laclede-Christy Clay Products Co.
ST. LOUIS, MO.

The Kelley Island Lime and Transport Co.

CLEVELAND, OHIO.

Tiger Brand White Rock Finish the best known and smoothest working Hydrated Lime manufactured.

WRITE FOR PRICES

THE LARGEST LIME MANUFACTURERS IN THE WORLD.

The Ohio and Western Lime Company

WORKS AT
Fostoria, Ohio
Gibsonburg, Ohio
Sugar Ridge, Ohio
Tiffin, Ohio
Huntington, Indiana
Geneva, Ohio
Limestone, Ohio
Lime City, Ohio
Portage, Ohio

MANUFACTURERS OF AND WHOLESALE DEALERS IN

Ohio White Finishing Lime, Ground Lime, Lump Lime, Fertilizer, Hydrate Lime, Cement, Plaster, Hair, Etc., Etc.

Capacity 8000 Barrels Per Day

Offices: TOLEDO O., 209-210-211 Chamber Commerce Bldg. HUNTINGTON, IND.

DOES NOT DETERIORATE WITH AGE.

EXCELSIOR HYDRATED LIME
The Cleveland Builder's Supply Co.
CLEVELAND OHIO

WILL NOT SLACK. ALWAYS READY FOR USE.

Excelsior Hydrated Lime

A PRODUCT OF MERIT.

The best prepared Lime in the market. Is superior to hot Lime for all purposes. Will not deteriorate. Absolutely pure and free from foreign ingredients. Successfully used for years by the largest users of Hydrate in the country.

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MADE ONLY BY

The Cleveland Builders Supply Co. Cleveland, O.

Try us on your Portland Cement requirements

A. & C. Stone & Lime Co.

MANUFACTURERS OF

CRUSHED STONE AND WHITE LIME

TOTAL CAPACITY CRUSHED STONE 4000 TONS DAILY.

Plants: GREENCASTLE, IND. RIDGEVILLE, IND. PORTLAND, IND.

LIME KILNS AT PORTLAND, IND.

General Office: 17 N. Penn. Street INDIANAPOLIS

Tell 'em you saw it in ROCK PRODUCTS.

The Clyde Hydrator

is the accepted standard of highest efficiency, economical operation, positive results and general all around serviceability in hydrating machinery

There are more of them in use than all others put together

They have proven their merit under all conditions

We will furnish full information, booklets and interesting data on your request

"We like to answer questions"

CLYDE IRON WORKS

Manufacturers

DULUTH, MINN.

Tell 'em you saw it in ROCK PRODUCTS.

The

Strongest White Lime

ON THE MARKET

Uniform Quality **Finest Grain**

The American Clay Machinery Co.
WILLOUGHBY, OHIO

May 16, 1906.

The Mitchell Lime Co.
Mitchell, Ind.

Dear Sirs:—

Replying further to your favor of the 8th inst, requesting us to advise you the result of practical test of your lime in the manufacture of sand-lime brick. We are pleased to advise you that the lime dydrated easily and the brick made from it were first-class in every respect.

We have forwarded some samples of it to Mr. Elkus of the Indianapolis Composite Brick Co, and he can probably advise you further.

Very truly yours,
The American Clay Machinery Co.
by W. J. Burke.

MITCHELL LIME COMPANY

MITCHELL, INDIANA

GUARANTEED FOR SAFETY

IMPROVED SYSTEM

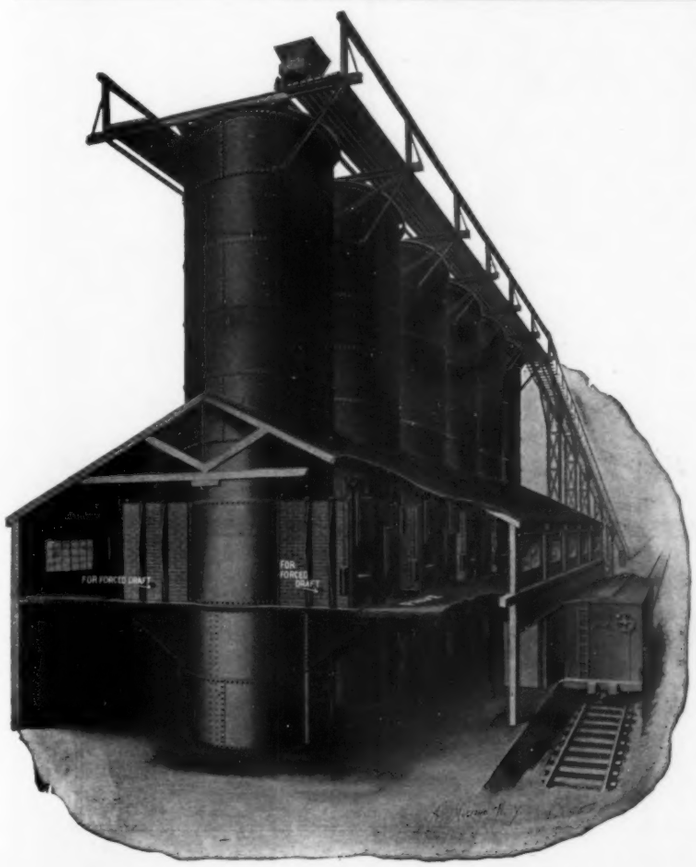
BEST QUALITY

BANNER HYDRATE LIME

MANUFACTURED BY
NATIONAL MORTAR AND SUPPLY CO
PITTSBURG, PA.

WORKS GIBSONBURG, OHIO.

WRITE FOR INFORMATION



Keystone Lime Kiln

BROOMELL'S PATTEN

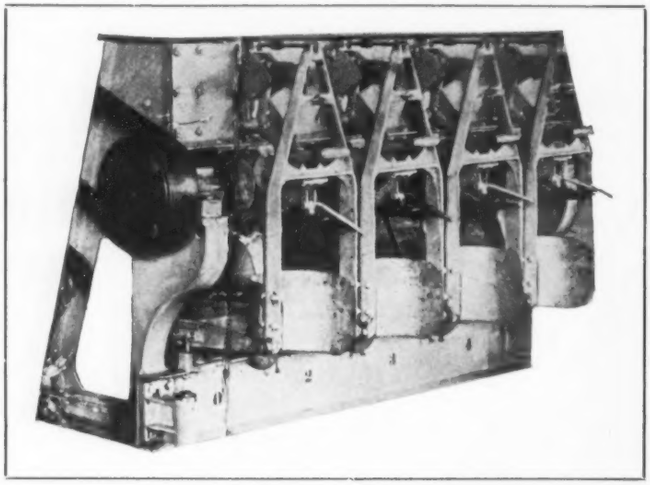
This illustration shows a battery of six Keystone Lime Kilns set up complete ready for operation. No foundations being required and no stone work above the ground level, the kilns can be set very close together. Each kiln is arranged with four furnaces which are supported on heavy brackets. These same brackets support the timbers on which the firing platform is built, the timbers extending out to the edge of the building and supported on posts. The firing platforms are bricked from end to end, making ample room for firing and storage of coal. The ground floor on which the lime is discharged is entirely clear from posts or other obstructions. Note the substantial manner of supporting the platform on top of the kilns. Send for catalogue.

Broomell, Schmidt & Steacy Co.

YORK, PA.

Bates Valve Bags

No tying of paper.
Cotton tied by machinery.
Three men can fill and load in car 800 barrels daily.
Weights best the business has ever known.
Saves thousands of dollars in string and overloading of sacks.
Not half the dust, caused by old methods.



Write for proposition.

Bates Valve Bag Co.

1411 Schofield Bldg., Cleveland, Ohio

AUSTIN GYRATORY CRUSHER

The World's Leading Rock and Ore Breaker

The Only Automatically Lubricated Gyratory Crusher

8 Sizes—Capacities 40 to 2000 Tons.

Simple Construction (Saving Repairs)
Economically Operated (Saving Expense)
Correct Design (Saving Power)
Result: EFFECTIVE, DURABLE AND MAXIMUM CAPACITY.

Plans and Specifications Submitted for Any Size Plant.

Write for Catalogue.

AUSTIN MANUFACTURING CO., Chicago

New York Office, Park Row Building

DRYERS
OF EVERY TYPE
CONSTRUCTED FOR ALL PURPOSES
AGENTS FOR BISHOP WATER JACKETED FURNACE FRONTS
UNITED STATES DRYING ENGINEERING CO.
66-70 BEAVER ST., NEW YORK, U.S.A.

MACHINERY

FOR

Industrial Plants

We manufacture machinery for transmitting power, and for elevating and conveying materials in and about cement plants, rock-crushing plants, lime plants, mortar works, plaster works, and other industries.

We manufacture screw conveyors, belt conveyors, and all sorts of chain and cable conveyors, for handling rock, lime, sand, etc.

We manufacture elevators, also, for handling the same kinds of material.

Our lines include shafting, couplings, bearings, collars, pulleys, gears, rope sheaves, sprocket wheels, elevator buckets and bolts, steel elevator casings, etc.

We have our own foundry, sheet metal department and machine shop. We employ first-class help in all departments and use high-grade materials.

When you are in need of anything in our line, try us.

Catalogue No. 28.

H. W. Caldwell & Son Co.

17th St. and Western Ave., Chicago

Fulton Bldg., Hudson Terminal, No. 50 Church St., NEW YORK CITY

Do You Have Cars to Haul?

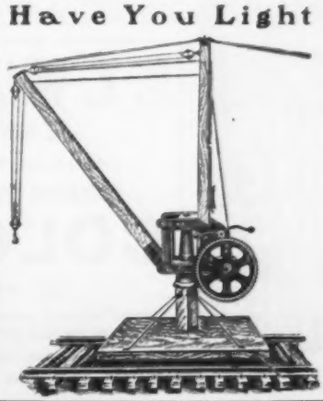
The Davenport Locomotive Will Save Money

Special Designs for Special Purposes
Any Size, Any Gauge, Any Weight
Write for Prices and Particulars

DAVENPORT LOCOMOTIVE WORKS

DAVENPORT, IOWA

Have You Light Lifting To Do?



If so, you cannot afford to get along without one of our

Parker Derricks

Made in Two Sizes

No. 1 Derrick Lifts 1,500 Pounds.
No. 4 Derrick Lifts 4,000 Pounds.

They are Light, Simple, Safe, Easily Set Up, and will do more work in 2 hours with 3 men than can be done in 10 hours with 6 men any other way.

Write for Our New Catalogue.

Parker Hoist & Machine C

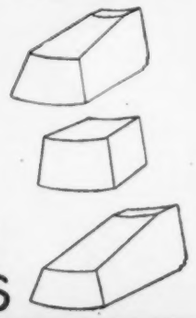
957 N. Francisco Av

CHICAGO

ROTARY CEMENT LINERS.

ASHLAND FIRE BRICK CO.
ASHLAND, KY.

IRONTON CROWN.



LIME KILN LININGS.

GROUND CLAY FOR WALL PLASTER AND BOILER SETTINGS

DIRECT HEAT

DRYERS

—FOR—

BANK SAND
GLASS SAND
ROCK, CLAY
COAL, ETC.

All Mineral, Animal and Vegetable Matter.

We have equipped the largest plants in existence and our dryers are operating in all parts of the world. Write for list of installations and catalogue S. C.

American Process Company
62-64 William Street, NEW YORK CITY

RUGGLES - COLES

DRYERS

RUGGLES-COLES ENGINEERING CO.
NEW YORK CHICAGO

Cummer Dryers

See Other Ad. Page 68

THE F. D. CUMMER & SON CO.
Cleveland, Ohio.

BRICK and MORTAR **COLORING**

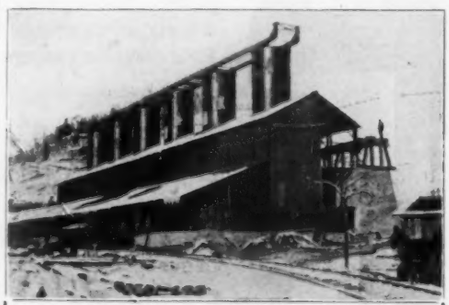
After twenty years "CLINTON" colors still stand at the head. Get the genuine, with the "Little Yellow Side-Label."
CORRESPONDENCE SOLICITED.

CLINTON METALLIC PAINT CO., CLINTON, N. Y.

MILWAUKEE BAG CO.
MILWAUKEE, WIS.
HIGH GRADE PRINTERS & MANUFACTURERS OF
DUCK,
OSNABURG
AND JUTE
CEMENT BAGS.
DEALERS IN
PAPER BAGS & TWINES.
WRITE FOR PRICES & SAMPLES

S. W. SHOOP & CO.
ALTOONA, PENNSYLVANIA
Designers and Builders of the
SHOOP IMPROVED PATENT LIME KILNS.
Designing and Installing a Specialty.

C. K. WILLIAMS & CO.
EASTON, PA.
The Largest Manufacturers in the U. S.
BRICK AND MORTAR
COLORING
OF ALL SHADES
CORRESPONDENCE SOLICITED. SAMPLES AND ESTIMATES CHEERFULLY FURNISHED ON APPLICATION.



Lime Kilns and Plant of Blair Limestone Co., Canoe Creek, Pa.
Designed by
Henry S. Spackman Engineering Company
42 N. 16th Street Philadelphia, Pa.

ROCK PRODUCTS

ESTABLISHED IN LOUISVILLE, KY., 1902.

DEVOTED TO CONCRETE AND MANUFACTURED BUILDING MATERIALS.

Volume VII. **CHICAGO, APRIL 22, 1908.** **Number 10.**

THE FRANCIS PUBLISHING COMPANY

EDGAR H. DEFEBAUGH, PRES'T.

Seventh Floor Ellsworth Bldg., 355 Dearborn St., Chicago, Ill., U. S. A.
Telephone Harrison 4960.

EDITORS:

EDGAR H. DEFEBAUGH. FRED K. IRVINE.

ASSOCIATE EDITORS:

HENRY C. WHITAKER, Barre, Vt. BENJ. F. LIPPOLD, New York City.

Communications on subjects of interest to any branch of the stone industry are solicited, and will be paid for if available.
Every reader is invited to make the office of Rock Products his headquarters while in Chicago.
Editorial and advertising copy should reach this office at least five days preceding publication date.

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In the United States and Possessions and Mexico.....$1.00
In the Dominion of Canada and all Countries in the Postal Union..... 1.50
Subscriptions are payable in advance, and in default of written orders to the contrary, are continued at our option.
Advertising rates furnished on application.

BRANCH OFFICES:

NEW YORK CITY, Room 405 St. James Bldg. NEW ENGLAND, 16 Merchant St., Barre, Vt
PHILADELPHIA, PA., 916 Rothschild Bldg.

Entered as second-class matter July 2, 1907, at the Postoffice at Chicago, Illinois, under Act of March 3, 1879.

Still the demand for crushed stone seems to have no end.

Municipal improvements in the way of sewers and streets are in evidence in many places.

It has been said that politics is the great national game, and baseball contains all the physical expressions produced by the mental study of the real thing. The opening of the baseball season has passed without serious damage, and when we get the real game in June let's hope that it will be no worse.

Concrete block manufacturers who make "standard blocks" have no trouble with building regulations even in the strictest localities. Every one who can make blocks at all can make them up to the standard specifications. It may take a little study and scientific application, but it is worth the effort. If you need any advice or help, remember that ROCK PRODUCTS is still on the job.

Let us not forget to keep alive the interest in the internal waterways improvement, which is perhaps the most important measure now up for general consideration. The side-show agitations invariably introduced every time Congress convenes must not be allowed to obscure the main issue. Millions—all the people—will be benefited by the improvement of the internal waterways. If the preliminaries were only complete now great progress could be made this season. And wouldn't it help some? Why put it off?

The price of any building material is the smallest argument in the consideration of its specification. Portland cement, gypsum plaster, lime, brick, sand and every other material used in construction are quoted much lower than in 1906 and 1907, when it was practically impossible to furnish anything like adequate supplies of these indispensables, and still there is no terrific rush to get up to the order clerk to realize upon the low quotations. It's just as we have said time and again. Cutting the price never increased the demand by even the most insignificant fraction. That is all the more reason why a short demand should be supplied at a good round profit.

Fine spring weather invites activity in the building trades, and there is a whole lot doing in the smaller towns. The cities seem to be still gasping for breath.

Road contracts are by no means short this year, but at the present rate of road-building in the United States it will take about 832 years to provide road equipment comparable to that of France, without allowing for the reconstruction of those worn out by constant use. The worst feature of our present system of road-building is the fact that there is no continuity to the new roads: they do not lead to any terminus at either end. A township simply votes an appropriation for a road, running north and south, for instance. The adjoining township votes for a road running southeast and northwest. Both of these roads are an accommodation to all the people who live within the township, but if the two roads were made into one by each township building that part of one straight line between its boundaries, then the usefulness of each would be increased by making it available to residents of the other township. This idea carried on *ad infinitum* would make the present road-building operations of the country twice as valuable in the future, when long stretches of good roads would be connected up in this way, reaching from one important community to another in every direction. Perhaps State supervision would help this materially. It should be looked into, for it costs no more to get the additional value added in.

What Ails the Railroads?

Since the railroads have gone in for politics on the "whole hog" scale, their improvements go by default. One is led to suspect that perhaps their political methods cost as much money as the maintenance improvements, and it is easy to figure then where the traveling public has to settle. If they could be persuaded to go on with the improvements instead of gambling in politics, perhaps there would be greater profit in the actual operation of the railroads, and all this useless expenditure might stop, much to the relief of the commercial world, already well burdened with overhead charges. By the way, is not the coming election an opportunity for business men to insist that the railroad interests confine their efforts to improving the practical railroad accommodation of the country, thereby earning legitimate profits, instead of manipulating parties for the sake of legislation with financial opportunity attached? Real railroad men could make a splendid profit out of the business itself. There are plenty of such men to be had; so what's the use paying the wrong man every time? The railroads have not been spanked enough by any means. If the people now in control continue to refuse to be good, just watch the voters wallop the political parties that oppose railroad regulation. The producers and steady contributors to the progress of this country have been long suffering in this matter, which is near to every citizen, but abuses have about reached the limit, and the time for a showdown is at hand. Railroad officials and railroad lawyers are alike suspected, and the present spectacle does not help much, for every available dollar that is badly needed for permanent improvements to the practical service of the lines has been diverted into other channels to play upon the political green cloth. Let us see if we can't squeeze the politics out of railroad managements in 1908, and we shall see much cheaper and at the same time much better service, earning a legitimate profit, with plenty of money to carry on improvements upon a larger scale than any yet suggested. Besides it would be a step in American progress worthy of the effort—and one not very hard to accomplish. Think it over.

EDITORIAL CHAT

Chas. C. Kritzer of the Kritzer Company, Chicago, is at Yorktown Heights, N. Y., attending to the details of completing a lime-hydrating plant of large capacity for the Lowell M. Palmer Company. The principal market for the output of this plant will be New York City, which has never yet been adequately supplied with hydrated lime.

F. C. Meacham of Meacham & Wright, Chicago, is spending a week at French Lick to rest and get rid of the grippe, and incidentally to absorb Indiana politics, of course. Frank Wright has also had his share of the bad cold epidemic and gone to his country home to get rested up. As he is such an enthusiastic motor boatman he is violently suspected of superintending the getting of his fine yacht into commission. Their splendid office organization, made up of Foster, Sullivan and Wright, Jr., can take care of all the cement business just now anyway.

A. E. Beck, general manager of the Oklahoma Portland Cement Company, whose works are located at Ada, Okla., was in Chicago last week. He says the new mill is running in a satisfactory way with market sufficient to take up all the output being developed close to the mill. Although Mr. Beck hails from Indiana, he is an enthusiast over the fine showing of development in the new State of Oklahoma. He can show a briquette that was made of the new O. K. brand about the time they started up, which could not be broken till a new supply of shot was provided, when it broke at 1,500 pounds at eight days old. The enterprising people now moving into Oklahoma seem to be naturally inclined to be cement-users; indeed, concrete construction is much cheaper than wood.

Fred E. Paulson, the great sunshine artist and head of the Lehigh Portland Cement Company's Western sales office at Indianapolis, says there have been three weddings of members of his staff and he in the capacity of a patriarch presided over all the brides and grooms assembled at the dinner table last Sunday. It was hard to remember the names always, but a little thing like that wouldn't matter.

Robert C. Morris, president of the Central Concrete Construction Company, Louisville, was a recent caller at the ROCK PRODUCTS sanctum. He reports concrete work in the South a little less than last year, but is glad of the smaller pressure of work, which is altogether more satisfactory.

A. E. Preuss, who sells Utica cement to the trade and is always recognized by that white Fedora hat, just stepped in to say hello and remark about the nice weather for starting heavy construction work. He notes that same inactivity that is reported from all the markets.

A. A. Pauly of Youngstown, Ohio, has recently taken a Southern trip to observe business conditions and suitable locations for the profitable manufacture of concrete structural tile by his patented process, which is proving to be a pronounced success wherever it is known. His progress resembles a march of triumph, for the merit of his great invention is readily recognized by every expert in the building trades.

A. T. Bradley, of the Century Cement Machine Company, Rochester, N. Y., who are builders of Hercules cement stone machines, advises that the blocks manufactured by the Fulenwider Concrete Block Company, of Birmingham, Ala., which showed such successful fire test as reported in ROCK PRODUCTS for March, were made on the Hercules machine. The importance of this test to the concrete block industry cannot be overestimated, for the test was conducted by the building authorities of the City of Birmingham and convinced them beyond the possibility of reasonable contradiction that the concrete block is a building material with very high fire-resisting qualifications whenever the blocks are properly made and properly cured. It is to be noted that in the splendid fire-test given to cement blocks at Anderson, Ind., several months ago the blocks were also made upon a Hercules machine.

G. G. Fry of Indianapolis has issued an attractive circular describing an invention of an adjustable house mold by means of which concrete walls can be constructed with a great saving of labor, it is claimed, and at the same time secure a very neat appearance for the outside surface.

We print this month a picture of J. B. Foote, of the J. B. Foote Foundry Company, of Fredericktown, O., who is making strenuous efforts to have a bill passed by the various State legislatures which will do much toward raising the concrete block in the esteem of the architect, builder and contractor. Mr. Foote realized some time ago that a great deal of the prejudice which exists in some sections of the country was caused by a lack of confidence, engendered by poor workmanship and carelessness on the part of the concrete operator. In order to correct this impression he conceived the idea that if a label could be pasted on each block manufactured, showing the date when manufactured, the proportion of cement and aggregate, the brand of cement and any other information regarding the same, anyone could tell at a glance just what he was getting and it would eliminate all danger of failures.

C. E. Higbie, the well-known tunnel contractor, who is at present building the Raton Tunnel, which extends through the Raton Mountains on the main

J. B. FOOTE, FREDERICKTOWN, O.

line of the Santa Fe, when interviewed at a Denver hotel recently, said: "This tunnel will be a great improvement to the railroad company. It will do away with the use of push engines, which are now required to get heavy trains over the 2 per cent grade in the old tunnel. The new tunnel has a small grade, one-half of 1 per cent, and any train which is brought to the tunnel by one engine can be taken through it without extra assistance. The portals of the great tunnel have been neatly finished off with a surface coating of rich concrete dressing. The tunnel will be put into service by the first of May.

The Alpha Portland Cement Company have opened a branch office in the National Bank Building at Savannah, Ga. They have also established a warehouse at that point and are prepared to supply all the territory contiguous to this part with Alpha cement.

William M. Burchfield, formerly with William S. Humbert, is now connected with the Penn-Allen Portland Cement Company of Allentown, Pa.

F. E. Paulson, of the Lehigh Portland Cement Company, writes us: "We are doing very nicely. In fact our shipments at the present time are up to the capacity of the mill, and everything looks very bright. Of course there are still a bunch of 'calamity-howlers,' but we pay little attention to them."

William Woodhall, Jr., well-known engineering specialist in rock-crushing and reclaiming works, has joined the field force of the H. W. Caldwell & Son Company of Chicago.

H. H. Supplee, of Los Angeles, Cal., has the contract to build 12,000 feet of sewers, consisting of one main line and a number of branches, which will be constructed entirely of concrete pipe. A gang of men are now at work manufacturing the pipe, which is cast solid in sections of wet concrete around which iron bands are placed previous to molding. Recently a demonstration in the shape of a compression test was made in the presence of the Mayor, the sewer committee of the City Council, City Engineer Charles H. Piper, and Superintendent of Streets J. H. Quinby, when a 3-foot section of 36-inch internal diameter reinforced concrete pipe was tested to show that it would stand successfully a pressure of 5,000 pounds. According to contract requirements, no pipe could be used in the contract which would not stand such a load. Several sections of pipe were tested, and at a pressure of 8,000 pounds to one foot of pipe-length supported upon one-sixth of the outside circumference very slight cracks developed. Even at 10,500 pounds to the foot the weight was unable to crush the pipe, although tension cracks developed at the sides. The city officials expressed themselves as entirely satisfied with the demonstration.

Sam W. Curtis, of the Garden City Sand Company, Chicago, shows a neat demonstration of his "waterproofed" cement.

W. W. Fischer, of Memphis, president of the Builders' Exchange and head of the Fischer Lime and Cement Company, was a recent Chicago visitor. He says there are a lot of building operations in and about Memphis, although inclined to quiet down after so much activity last year.

The Builders' Club of Chicago gave its annual banquet in the Pompeiian room at the Auditorium Annex on the evening of Monday, March 30. There were 300 contractors present, and James Hogan, president of the organization, was the toastmaster of the occasion. He was a good one, too, for the boys "had all they wanted to eat and drink." The speakers of the evening were Dr. Evans, city Commissioner of Health; Addison E. Wells and W. B. Mundie, whose remarks were much enjoyed and heartily applauded. The proposed Builders' Club office building was the principal subject of discussion, and from the interest displayed it is highly probable that definite steps will soon be taken for the purpose of completing the preliminaries on a scale that will reflect great credit upon the promoters of the scheme.

John G. Evans, of the Chicago office of the Atlas Portland Cement Company, has returned from a six weeks' Southern trip. He always finds some business and looks like a ten-time winner.

D. K. Thompson, Columbus, Ohio, one of the livest members of the Ohio Builders' Supply Dealers' Association, is said to have political ambitions. He ought to have whatever he wants, for he makes good with everything that comes his way.

The Power and Mining Machinery Company, Cudahy, Wis., announce the new location of their San Francisco office as 217 Sheldon Building, where mining and crushing machinery equipment will always be kept on top for the use of Pacific Coast manufacturers.

A. L. Byron of the Vulcan Steam Shovel Company, Toledo, O., was looking happy like a big sunflower the other day in Chicago. Of course things were looking good to him, for he had just landed an order for two big shovels for the Great Lakes Dredge and Dock Company, who have a big line of excavation work to start soon.

Arthur G. Young, Superintendent of the Stambaugh Building, Youngstown, O., has turned over the completed job to the owners. The reinforced concrete work was done by the Kahn Construction Company. The building, which is fireproof in every respect, is without doubt the finest in the city. Mr. Young acted as general superintendent for the owners and has been released with the highest recommendations.

The United States Engineer's office at New Orleans, La., is considering bids upon the construction of seventeen reinforced concrete buildings at Burwood, which is the biggest contract in connection with the construction of the Government's permanent plant at Southwest Pass, which is the proper channel of entrance to the harbor of New Orleans. One of the buildings will be used for offices, and the others will be used as dwellings.

The Stutzer Cement Company, of Venice, Cal., has been awarded the contract by the City of Santa Monica for the construction of the municipal pier to provide for the marine end of the sewage system. The contract price is $82,890. Work upon the massive concrete foundations will begin at once.

Mayberry & Parker, structural engineers of Pasadena, Cal., have submitted plans for a reinforced concrete bridge between Pasadena and Linda Vista, with estimated cost of $20,000, as compared with plans for a steel bridge at the same place at $25,000. The City Council passed favorably upon the concrete structure.

The trouble with the general public is that they too soon forget. A great holocaust such as the Collinwood disaster occurs, and for a few days the daily press rings with denunciations of the building commissioners and others who are entrusted with the safety of the general public. What is the use of having laws on the statute books when they are not enforced? Nearly every city of any consequence has building commissioners and fire commissioners whose duty it is to see that the buildings are properly constructed according to the size and location of the building and the number of people whom it is to shelter. That these laws are disregarded, and frequently through bribery and corruption, is a lamentable fact. It is up to the taxpayer to see, when he elects an officer to fill such responsible positions as these, that they are of the highest integrity and honor and that they will perform their obligations as the laws provide.

The United States Gypsum Company has recently issued an interesting booklet on Ivory Cement Plaster. The front cover, upon which is depicted an elephant making an unsuccessful attempt to force its way through a wall of Ivory Cement Plaster, is indeed suggestive of the strength of this excellent product. The booklet contains many reproductions of photographs of well-known buildings throughout the United States which have been plastered with Ivory Cement, besides reading matter containing much interesting information regarding this particular brand.

Recent New York Incorporations.

Castleton Brick and Tile Company, New York. Capital, $50,000. Directors: Isaac H. Love and George Lodge, 132 Nassau Street; L. H. Leber, 29 West Sixty-fourth Street, New York.

Alba Lime Rock Company, Warwick, Orange County. Capital, $400,000. Directors: George H. Wolle and Clarence A. Wolle, Bethlehem, Pa.; Robert A. Peattie, 32 Nassau Street, New York.

Invincible Fireproof Flooring Company, Brooklyn. Capital, $10,000. Directors: Gustave Niederehe and Philander Griffing, 112 Washington Avenue; Stephen Griffing, 293 Eighteenth Street, Brooklyn.

Reliable Roofing and Damp Proofing Company, New York. Capital, $1,000. Directors: Philip Jacobsohn, 278 Brook Avenue; Isidor Newman, 108 West 111th Street, New York; Herm. Malkin, 170 Williams Avenue, Brooklyn.

Robert C. Martin & Son Company, New York; building materials. Capital, $10,000. Directors: Robert C. Martin and Robert F. Martin, 156 Fifth Avenue, New York, and Archibald S. Reid, 45 Clinton Street, Newark, N. J.

George Richter Company, New York; mason work. Capital, $500. Directors: George R. Richter, 100 William Street, New York; Agnes G. Richter, 237 Seventh Street, Jersey City, N. J.; Catharine Callahan, 71 Schaeffer Street, Brooklyn.

Troy Engineering and Construction Company, Troy, Rensselaer County. Capital, $50,000. Directors: Walter H. Mansfield, 1, 821 Seventh Avenue; Ransom H. Gillet, Frear Building, Troy, N. Y.; Austin L. Burton, R. F. D. No. 2, Warren, Me.

James Hutchinson and Charles Perkins will open a cement block factory at Loveland, Ia.

Nels Erickson, 406 Boston Block, Minneapolis, is doing a big business in concrete blocks. His latest "wrinkle" is to give a smooth waterproof block a natural rock face with compressed air.

The A. Shall Company, concrete block manufacturers at Omaha, Neb., have enlarged their plant by purchasing two additional lots at Sixth and Jones Streets, and also the strip adjoining them, which will be used for trackage. The consideration was $12,500.

HOW ABOUT THE OFFICIAL WHO DOES NOT ENFORCE THE LAWS FOR PUBLIC SAFETY?

ECHOES OF THE PHILADELPHIA MEETING.

Charles Warner represented the Nazareth Cement Company.

A. F. Gerstel and John B. Wight represented the Alpha Cement Company.

S. D. Lincoln ably represented the National Mortar Company, of Washington, D. C.

E. Meyer attended the convention on behalf of the Edison Portland Cement Company.

R. W. Lesley, of the American Cement Company, was an enthusiastic worker at the meeting.

Conrad Miller, of the Dexter Portland Cement Company, graced the occasion with his presence.

William N. Beach, of the Pennsylvania, certainly is a hustler and is indispensable at a convention.

The Phoenix Cement Company was represented by H. Fetter, of the W. G. Hartranft Cement Company.

E. B. Allen, general manager of the Adams Bag Company, came all the way from Cleveland to mingle with the delegates.

Secretary P. H. Wilson, of the association, was one of the busiest men in Philadelphia during the sessions and between times.

E. M. Hagar, president of the Universal Portland Cement Company, was, as ever, one of the most active workers at the convention.

Charles L. Johnson represented the Castalia Portland Cement Company and officiated as secretary of the Sales Managers' Association.

Alfonso de Navarro made his first visit to a meeting of the association and was gratified with the expressions of good will in evidence.

H. O. Connelly, from the New York office of his company at 11 Broadway, represented the W. S. Tyler Company, whose headquarters are in Cleveland.

Horace K. Kimble, of the Kent Mill Company, 170 Broadway, New York, was in attendance as usual and had his customary good time with his many friends.

Although business engagements cut short his stay, L. H. Sturtevant, secretary of the Sturtevant Mill Company, had ample time to shake hands all around.

Jas. B. Weaver, who is known to the trade through his past connection with the Bonneville Portland Cement Company, called at the hotel during the convention.

James W. Wardrop, recently elected executive secretary of the National Builders' Supply Association, became well acquainted and made many friends at the meeting.

The Vulcanite Portland Cement Company was represented at the convention by Mr. Albert Moyer, of New York, and Edward F. Cobb, from the company's Philadelphia office.

The Lehigh Car, Wheel and Axle Works, whose New York office is at 111 Broadway, was represented by J. W. Fuller, Jr., and Wm. Frank Hall, who were busy meeting their many friends.

E. C. Griffin and W. D. Philips attended the convention on behalf of the Bradley Pulverizer Company, of 120 Liberty Street, New York. W. D. Phillips became general sales agent for the company on February 1. He has already made many friends in the trade.

Amos Kendall, of the Omega Portland Cement Company, has a new wrinkle in cards. On the reverse side of his present supply is the following:

Geoffrey—"Could you be happy in a modest little cottage, darling?"
Gwendolen—"Not unless it is one of those lovely dreams in concrete, dear."

F. M. Frost is putting in machinery at Jerseyville, Ill., for the manufacture of cement tile.

The Schumacher-Georgenson Cement Company, a new concern at Manitowoc, Wis., will erect a plant west of that city for the manufacture of cement blocks, etc.

C. F. Nordstrom is building a concrete plant at Rockford, Ill. He has just ordered two new automatic mixers and weighers and will have one of the most complete plants in this section.

John Driscoll, who has leased desirable quarters at Appleton, Wis., for the establishment of a concrete block factory on Locust Street, made a trip recently to Chicago and South Bend, where he purchased a full supply of machinery, etc. At the latter place he bought a complete outfit from the Ideal Concrete Machinery Company.

L. Richards of Greenwich, N. Y., has leased a site in North Albany, N. Y., for the establishment of a concrete block factory and will soon install a complete concrete plant. The site he has secured is on the sand deposit near the Loudonville road. Mr. Richards has been engaged in the manufacture of concrete blocks at Greenwich for a number of years and expects to find an excellent field in Albany.

QUARRIES

To Illinois Quarrymen.

Quarry operators in the vicinity of St. Louis met a few years ago and organized the Quarry Club. This club now consists of twelve quarry companies, and its work in a local way has been very beneficial to the members.

It has now developed that the interests of the crushed stone men, both locally and at large, are seriously menaced by the State penitentiaries furnishing crushed stone free of cost for the construction of good roads.

The Illinois quarrymen are feeling this worse than those of any other State. It is therefore necessary for some action to be taken, and a meeting will be called at Springfield, Ill., on May 1.

Every operator in Illinois who wants his interests protected should be present and support this movement. Everyone is invited to send his view on this subject. Address Association Editor, ROCK PRODUCTS, Chicago.

Ohio State Stone Club Meets.

The Ohio State Stone Club held a meeting at Toledo on the evening of April 8, 1908. The attendance numbered twenty-five. Matters of importance were transacted and much good accomplished. President Patterson appointed various committees who have duties to perform, the nature of which will interest all quarry operators in the State, especially those who are members of the club. The members who attended expressed themselves thoroughly pleased with the benefits thus far derived through the efforts of the club. The next meeting will be held at Columbus in early June, at which time a large attendance is expected.

The Ohio State Stone Club legislative committee held a session at Columbus on Tuesday, April 14, 1908, and conferred with members of the legislature with a view to having a bill enacted by which the purchaser of crushed stone and the producer will have equal rights governing the marketing of stone by weight. The enactment of such a law would eliminate disputes as regards engineers' measurements, which have heretofore been a bone of contention.

To Build Stone Roads.

BOWLING GREEN, April 15.—The County Commissioners have just granted petitions for the construction of the Ziss stone road in Middleton Township and the Cummins road in Washington Township. Both townships in June will have paid for all the roads already built.

Crushed Stone Proposals Called For.

PLAINFIELD, N. J., April 11.—The Common Council of this city will on May 4 receive sealed proposals for crushed stone requirements for the year 1908, the bids to state the price per ton of 2,000 pounds, for furnishing the following sizes, viz:

Fine screenings, ½-inch stone, 1½-inch stone and 2½-inch stone, in such quantities, and delivered at such times and places in the city as the Street Commissioner may direct.

The approximate quantities of the several kinds of crushed stone as estimated by the Street Commissioner are as follows: Fine screenings, 100 tons; ½-inch stone, 500 tons; 1½-inch stone, 2,000 tons; 2½-inch stone, 200 tons, and such estimated quantities may be taken into account in awarding bids.

The above must be of the best quality trap rock, free from soft stone, dirt or other foreign matter, and each bidder shall submit with his bid or bids samples of the crushed stone to be furnished.

Turnpike Contract Let.

PARIS, KY., April 14.—Turnpike Supervisor C. F. Redmon has completed the letting of turnpike contracts, aggregating 1,872 rods, representing sixty different turnpikes. Some fifteen or twenty roads were let at an average of $16 per rod, but later these bids were rejected and the Supervisor, with the consent of County Judge Denis Dundon, has been letting the contracts privately and has secured contracts from responsible contractors at an average price of about $6.50 per rod. The county was divided into three districts and each district was subdivided. The contracting firms were each given a certain district and road to work.

A Public-Spirited Quarryman.

MARSHALLTOWN, IA., April 7.—George F. Kirby, president of the LeGrand Quarry Company, would aid materially in the movement for better roads leading into the city by donating the crushed rock for the first mile of macadamized road. This offer was made by Mr. Kirby at the good roads conference of members of the City Council and Board of Supervisors with the Retail Merchants' Association.

The offer has no strings tied to it, and the material may be had for the purpose indicated for use on any road that may be selected that leads into the city.

It was not possible to accept it, although Mayor Ingledue and others who were present were anxious to do so, because the Board of Supervisors, upon whom rests the responsibility of levying the tax desired, gave no indication of how they stood on the tax proposal.

The Merchants' Association desires that the Board of Supervisors levy a 1 mill tax on city property to be expended in the improvement of country roads leading to the city, by the supervisors, under the direction of the City Council.

A talk relative to good roads and their value, and especially macadamized roads, was made by J. W. Burroughs, general manager of the quarry company, who has given the subject of concrete paving and macadamized roads much study. Professor P. G. Holden of Ames, who happened to be in the city, was called on to speak, and his talk was also beneficial.

Contracts to be Awarded.

CINCINNATI, OHIO, April 7.—Contracts will be drawn with the following firms for supplies, screenings and crushed stone to repair streets: For Price Hill, 5,000 cubic yards crushed stone and 800 cubic yards screening; for Avondale, Mt. Auburn and Corryville, 4,000 cubic yards stone and 650 cubic yards screenings, to the Statler Stone Company; for Fairmount, Clifton and Bond Hill, 6,500 cubic yards of stone and 1,050 cubic yards screenings, to the Miami Stone Company; for Walnut Hills and Linwood, 5,000 cubic yards crushed stone and 850 cubic yards screenings, to the Moores-Coney Company.

The Latest Type of Gyratory Crusher.

COLUMBUS, OHIO, April 14.—A No. 18 crusher is the latest type of gyratory crusher. One has been installed here for the Casparis Stone Company of this place, and will be used for crushing the rock brought direct from the quarry.

This crusher is 25 feet high and has a width of 14 feet across the top shell; it weighs approximately 400,000 pounds. The minimum feed opening between the crushing surfaces is 36 inches. Two discharge openings are provided instead of one, as is usual with smaller breakers.

A crusher of this size can only be used in large quarries where the broken rock is loaded onto cars by means of steam shovels. With this crusher no preliminary block-holing or sledging is required.

W. O. Taylor, general manager of the Casparis Stone Company, said yesterday that the company is now crushing from 1,500 to 2,000 tons of material at its big plant and that inquiries are showing quite an increase.

As the greater part of the product of the company is taken by iron furnaces and steel mills, the increase in the output shows the improvement in that business. The Western plants of the company are quite busy, the Illinois plant being busily engaged in furnishing crushed stone to the Chicago mills and furnaces of the United States Steel Corporation.

County to Sell Rock-Crushing Plant.

TACOMA, WASH., April 10.—Plans for the rock-crushing plant which it is proposed to establish here have been completed by the County Commissioners. If they are carried out, Pierce County will have a plant for preparing stone for the repair of the county roads which will be second to none in the State. According to the specifications, an Austin gyratory crusher will be installed, with a 45-foot elevator, and storage bunkers for 150 cubic yards capacity. The minimum capacity of the plant will be 300 tons of rock a day, and this will be separated into three sizes for macadamizing work. The plant will be established in Nisqually Canyon, between LaGrande and Alter, on the Tacoma Eastern Railroad. It is expected that the contract for installation will be let next week.

The Mateer-McLaughlin Quarry Company, Kankakee, Ill., have opened their quarries for the season.

New North Carolina Quarrying Concern.

RALEIGH, N. C., April 20.—The Raleigh Quarry Company has been chartered with an authorized capital of $10,000, to quarry and sell all kinds of stone, crushed rock and building material, and will commence business at once. The plant is located below the Norfolk and Southern railroad junction, one mile northeast of Raleigh, and is considered among the best quarry propositions in this part of the State, having an almost inexhaustible quantity of blue granite. A. E. S. Lindsay is the president, J. N. Holding vice-president and A. Thomas Mial secretary-treasurer.

Nebraska Quarries Resume Operations.

OMAHA, NEB., April 18.—The crusher at the Nehawka Quarry, Nehawka, Neb., resumed operations last week, and this week all the crushers there will be worked, as there are plenty of orders ahead. The open winter has been good for the quarry interests and they have utilized it by stripping enough stone for the coming season. E. D. Van Court has installed new and more powerful machinery and built shipping bins to hold a trainload of crushed rock. The output from the Nehawka quarries last year was 8,000 cars. G. H. Davis started his stone crusher and quarry at Wymore, Neb., February 24, with a force of thirty men.

Crushed Rock Contracts Awarded.

BLUFFTON, IND., April 18.—Contracts for crushed rock to be used in road repairs and construction have been awarded by the County Commissioners to Levi Lucabaugh, who has a crusher in Rock Creek Township; Taylor and Bruce Shoemaker, who have a crusher north of Bluffton, and the Erie Stone Company of Huntington and the Baltes Stone Company of Ft. Wayne. The prices are in effect the same from the four companies. Delivered upon the banks of their quarries, or rather their bins, Lucabaugh and Shoemaker will furnish the crushed rock at 65 cents per cubic yard, and the Erie and Baltes companies would sell it at their quarries at the same figure, but since the commissioners want them to deliver it at railway stations inside Wells County they ask an advance of 45 cents for freight and handling. The price quoted by both of the foreign companies is $1.10 per cubic yard, and the Baltes Company will deliver rock at Montpelier, Keystone, Poneto, Bluffton and Ossian at the price of $1.10, and at Kingsland at $1. The Erie Company of Huntington will deliver rock at Markle, Uniondale or Kingsland, and to all points on the Clover Leaf west of Bluffton at $1.10.

Clam Feast in a Quarry.

NEW YORK, April 16.—A unique entertainment was provided recently by members of the Callanan family, who sell stone ballast to the railroads, at their quarry at South Bethlehem near Albany. High officials of the New York Central Railroad furnished special coaches for the occasion, the train leaving the Grand Central station at five minutes before one o'clock in the afternoon. The menu, composed of clams, lobster and chicken, was cooked and served in the open air. It was prepared by chefs who have had a great deal of experience in the quarry and who were accustomed to cook for men who have real appetites. The return trip was made the following morning.

Stone Crusher Burned.

RICHMOND, VA., April 10.—The stone crusher and tool-house on the western end of Mayo's Island was entirely consumed by fire last night. On account of the location of the plant the Richmond and Manchester fire departments were unable to reach it and a large crowd saw it burn without a stream of water to retard the progress of the flames. The plant was situated on the upper part of the island, which is unconnected by a road with the bridge, and the engines could not get within two hundred yards of the fire. The plant was the property of the Old Dominion Iron and Nail Works and was used for crushing stone for granolithic work.

The city of West Chester, Pa., has a municipal crusher which furnishes the stone for macadamizing purposes. Native stone has been used together with that furnished by the farmers. The amount of stone to be required this summer will not be sufficient, and it will be necessary to purchase stone from some quarry.

New Incorporations.

At St. Louis, Mo., the Rush Tower Limestone Company; capital, $150,000. Incorporators: Frank Mize, Charles F. Busch and Arthur S. Mittelberg.

At East Orange, N. Y., the Hillside Quarry Company; capital, $30,000. Incorporators: Charles H. Cutler, Albert R. Palsey and Harry B. C. Pickering.

At Camden, N. J., the Ridgeway Quarry and Sand Company, to quarry all kinds of stone; capital, $300,000. Incorporators: James O. McHenry, Morris Liveright, Philadelphia, and John A. MacPeak, Camden.

At Whitehall, N. Y., the Callanan-Squires Broken Stone Company, to quarry, crush and prepare for market broken stone for ballast and road repairs; capital, $150,000. Incorporators: John J. Callanan, Whitehall; William H. Squires and Bertha C. Squires, Clinton, N. Y.

The Cincinnati Crushed Stone and Gravel Company has been incorporated under the laws of Ohio with a capital stock of $50,000 and will erect on the Pennsylvania railroad, twenty miles out of Cincinnati, a washed gravel and crushed stone plant, with a capacity of not less than 600 yards per day. Those interested in figuring on boilers, machinery, etc., may address the Moores-Coney Company, Cincinnati, Ohio.

The Berkeley Limestone Company, Martinsburg, W. Va., has changed the motive power at its quarries from steam to electricity.

Supt. J. W. Lyon and force have made preparations at the Electric stone quarry, Belvidere, Ill., to begin operations for the season.

The West Park Stone Company, Findlay, O., are making preparations at their quarry on the Tangent Line Railroad to begin quarrying and crushing stone.

The big stone quarries of the LeGrand Quarry Company, Cedar Rapids, Ia., have been opened for the season's work, giving employment to a large number of men.

Faulkner County, Arkansas, has purchased a complete rock-crushing outfit, consisting of a portable engine and boiler, a stone-crusher, revolving screen and necessary appurtenances for $2,125.

The Hancock Stone Company has erected at its plant in South Findlay, O., a large stone chute. It connects the crusher with the loading apparatus and will enable the company to load many cars a day.

The Folsom Rock Company, Sacramento, Cal., has issued bonds for $100,000 and will operate a crushing plant at Dredge. It is proposed to crush all the cobblestones left in the wake of the gold dredges and to sell the crushed product.

Rates on brick and sand are to remain unchanged, at least if the recommendation of its committee on the subject is adopted by the Central Traffic Association. This means that there will be no change in rates on these commodities for possibly a year.

The Inland Construction Company commenced work April 1 on the erection of the crushing plant of the Markle Stone Company at Portland, Ind. Fred C. Bracey, president of the company, and Forrest Allen, assistant superintendent, have charge of the work.

With the revival of the cement trade the limestone shipments from the big quarries in the vicinity of Annville, Pa., are showing a big increase, and solid trains are now sent out from these quarries daily. Much of it goes to Chapman's and the mills in the vicinity of Allentown.

J. J. O'Laughlin for the Waukesha Lime and Stone Company, Waukesha, Wis., has secured an option on the stone quarry on East Avenue, owned by the E. W. Cahill estate. The company expect to erect a crusher on the property to take care of its local stone trade along the Northwestern line.

The Point Gratiot Sand and Gravel Company, Buffalo, N. Y., have bought the tug Wanick from Toledo parties and will add it to their equipment for this season's work. The company own and operate several tugs, sand-suckers and other paraphernalia on the lake front and are doing a large business.

The supervisors of Westtown Township have ordered from the big quarries at Locksley, Pa., sufficient crushed stone to complete the piking of the section of the Street road east of Tanguy to the West Chester road. The big quarries have started work again and the crusher has resumed operations.

The Illinois Steel Company has begun the preliminary work on the opening of a new stone quarry on the Rossville and Sidell division of the C. & E. I. north of Sidell, Ill. It is understood that the stone is of the same quality and quantity as that secured at the Casparis quarries near Fairmount. The same company is also opening up immense stone quarries in Michigan and will transport much of it across Lake Michigan by boat.

The Town Board of Naples, N. Y., has purchased a stone-crusher for $1,275.

Sam Stillwell began crushing stone April 3 for the Shirland road commissioners, to put on the road north of Shirland, Ill.

The stone-crushing outfit and engine of Edward Hess, of Kauffman's Station, Pa., fell through the bridge over the race at Scotland on April 7.

The stone-crushing plant of Robert Daley at the old Connor's quarry in East Haven, Conn., started work April 13 with a large force of men.

R. A. Malone, contractor for the work of improving the National road west of Washington, Pa., has resumed operations after a rest of several months.

The contract for furnishing crushed stone to North Plainfield, N. J., during the coming year was awarded to the Watchung Stone Company by the Common Council.

The Illinois Traction Company will establish a rock quarry on a tract of land east of Litchfield, Ill., for the purpose of providing ballast material for their lines in this section.

At the meeting of the City Council of St. John, Ore., April 1, contracts were let for a complete rock-crushing plant and steam roller, the total cost of which will be $4,500.

The C., G. & W. Trolley Company, Chambersburg, Pa., has purchased a modern stone-crusher which will be mounted on a car and operated by an electric motor taking current from the trolley wire.

The State Highway Department of Pennsylvania will shortly award a contract for the construction of a section of the old National pike, in Somerset county, a short distance out from Somerset.

Mr. Hancock, general superintendent of the General Crushed Stone Company, South Bethlehem, Pa., was in Le Roy, N. Y., recently, making arrangements for opening the local plant of the company.

The Clinton Point Stone Company, Brooklyn, N. Y., was awarded the contract at Queens Borough Hall for furnishing 17,900 tons of limestone and trap rock, broken stone and screenings at various points in the borough at $49,490.

Bids were received by the Service Board, Cincinnati, O., recently for the supply of crushed screenings, to cost $31,000, for the street repair department. The low bid was that of the Miami Stone Company at $1.15 per cubic yard.

The board of county road commissioners of Wayne County, Michigan, have awarded the contract for crushed limestone, crushed cobbles, limestone screenings and granite chips to F. B. Holmes & Co., of Detroit, who were the lowest bidders.

The Stewart-Kerbaugh-Shanley Company, of New York, has begun the construction of the Coleman Hill road in the town of Pompey, N. Y. This is the first of the good roads work that has been begun in that county this year. The contract calls for 1.21 miles of improvement and the price is $15,600.

The Schuylkill Stone Company, Reading, Pa., have secured Irvin Griesemer, formerly of Monocacy, to act as superintendent, to take the place of Mr. Egan, who has taken charge of a large railroad contract in the south. The crusher plants are nearing completion, and the company expects to ship stone by the first of June.

T. J. Combs, the new proprietor of the Bredl blue limestone quarry, Cedar Rapids, Ia., has closed a contract with the Universal Stone Crusher Company, of that city, for a crusher, elevator, tracks, cars, etc., amounting to $2,000. The Universal Company has also sold two crushers to parties in Joplin, Mo., one in Waterloo, one to the T. M. Sinclair Company, which is being installed, and one to the company controlling and improving "Vernon Heights," to be installed May 1.

The Rockwell Lime and Construction Company, of Chicago, has purchased the quarry of Henry Oestreich near Francis Creek, on the Green Bay extension of the Northwestern road, purchasing ten acres of quarry land adjoining. The company is composed of thirty Chicago contractors who will operate the plant, burning lime and crushing stone for their own use in Chicago. Work on the improvement of the plant has already commenced. A sidetrack is being placed at the quarry. Several cars will be shipped each day.

The Farmland Stone Company, Farmland, Ind., whose capital stock has been raised to $20,000, has elected a new set of directors as follows: Marion Dull, president; W. J. Clevenger, vice-president; E. T. Botkin, secretary; G. B. Watson, treasurer, and Homer Bennett. The company has installed all new machinery, new buildings, etc., and the output for the coming season will be greatly increased.

The capital stock of the Broken Sword Stone Company, Bucyrus, O., has been increased from $10,000 to $25,000.

CONCRETE CULVERTS FOR COUNTRY ROADS.

By Fred L. Reeder, of Tipton, Ind.

(Paper read before the Iowa Cement Users' Association.)

"I am afraid of concrete culverts," was the frank acknowledgment made by a fellow road officer a few months ago. That position of fear is the one taken by a large per cent of the road men in this State today. Looking for the causes responsible for this condition of mind, I think the two having the greatest weight are, first, the improper conception of concrete construction, and, second, the cost. As one's knowledge of the work and his experience increases he becomes more confident and satisfied that the policy of constructing permanent culverts is the wise one. A close attention to every detail will often greatly reduce the cost of these culverts. Our first experience with concrete culverts demonstrated the fact that when placed here and there in different parts of our township they cost us completed about what the patented iron or steel culverts of like dimensions would cost laid down in the dealer's yard. Where the culverts were favorably located and the number of them to be constructed close together, we have been able to cut the cost in two. Strict supervision must be had over material and labor from the time the gravel is loaded at the shipping point until the last shovelful of filling is put in place. When the road officer has satisfied himself, developed confidence in concrete construction and has systematized the material and labor to its minimum cost, he is then ready—and not until then—for practical concrete culvert work.

For culverts smaller than 24 by 24 inches we make a flat bottom and an arched top over a collapsible galvanized form of our own construction. These culverts can easily be doubly reinforced. Two rods placed longitudinally in the bottom give protection against cracking in case the ground permits the center of the culvert to settle more than the ends. Two rods placed similarly in the top give protection in case the ends of the culvert tend to settle lower than the center. Transverse rods placed in the bottom guard against longitudinal cracking. An arched rod placed every two feet in the sides and top in the following manner will materially add to the strength. The top of the reinforcing arch should pass through the lower part of the concrete arch. Where the reinforcing arch is extended downward and outward it should pass through the side walls close to their outer edge. This disposition of the reinforcing rod adds strength where it is most needed. This form of culvert can be successfully used without any reinforcement where there is little likelihood of the ground settling unevenly and where there is considerable fill. We believe we are making a concrete culvert which is longer-lived than any other material in use and at a cost much below what temporary culverts cost.

Many road officers find themselves in possession of a number of sewer pipe culverts which cause anxiety from their liability to wash out. Where these sewer pipe culverts are already in, we find it advisable to cement the joints together and construct self-supporting doubly reinforced wing walls. These walls should extend two feet into the ground. We make the head wall three feet long, with a wing two and one-half feet long extending outward at an angle of 45 degrees from each end. A 6-inch wall is amply heavy for ordinary fills. The entire expense of thus protecting these sewer pipe culverts is often saved during a single heavy rain. After a flood which washed out a number of sewer pipe culverts, those which had been protected with concrete wing walls were found intact.

For some years past a number of arched concrete culverts have been constructed with little or no regard to the work they were to perform. In many instances a much smaller-sized culvert would have served equally well. With the introduction of steel reinforcement the concrete walls can be reduced in thickness with good results. The reinforced concrete slab top culvert is proving satisfactory in every particular. In many cases this form of culvert may be built for the same money that the lumber culverts are now costing. I have in mind one such culvert that was built 30 feet long to permit a sufficient fill. This was constructed of reinforced concrete as stated above and at a cost below what the regular wooden culvert would have cost.

Our township in the past two seasons has placed about thirty jobs of concrete work of different forms with the full confidence that the work will stand for many years to come. This work has been done on a three-mill road tax. In the meantime the roads themselves have not been neglected, but are in the best condition ever known in the history of the township. In constructing these concrete culverts we have aimed at the best possible product at the least possible expense.

The following directors have been elected for the Moline Lime and Stone Company, Marion, O.: Henry Ackerman, president; J. W. Thew, vice president; L. V. Uncapher, secretary; W. B. Everett, treasurer; C. D. Resler, general manager, and W. A. Elston, sales manager.

Sardo Feido, boss quarryman for the Cheshire Lime Company, was found dead on the morning of April 1 in the company's quarry at Cheshire, Mass., with his skull fractured. It is thought that he walked over the ledge of the quarry while returning to his cabin in the evening.

The Board of Supervisors of Springfield, Mass., have been receiving a number of bids for various public works and recently let some of them. The contract for trap rock was divided between J. S. Lane & Son of Westfield and the Connecticut Trap Rock Quarries, the former to make the deliveries on the Boston and Albany Railroad and the latter on the New York, New Haven and Hartford.

MacDonald & West are preparing to largely extend their Omer, Mich., lime kiln business. A hoisting engine has been installed, a siding put in from the D. & M. and plans are perfected for building new kilns and sheds, etc. All the output of the kilns now in use has been sold, the Dupont Powder Company and the North American Chemical Company being large buyers. The limerock, of which the company has an unlimited supply, is said to test 96 per cent carbonate of lime.

Lime

The National Lime Manufacturers' Association

Meets Semi-Annually.

W. E. Carson, Riverton, Va.....President
A. Newton, Chicago.....First Vice-President
F. M. Palmer, Jr., New York.....Second Vice-President
F. P. Hunkins, St. Louis.....Third Vice-President
C. W. S. Cobb, St. Louis, ...Treasurer

Official Organ, ROCK PRODUCTS.

THE ENGINEERING CLUB.

President Carson Reviews the Work and Aims of the Association and Its Promising Auxiliary.

RIVERTON, VA., April 7, 1908.

To the Lime Manufacturers of the United States, Greeting:

In my letter of March 20, which appeared in ROCK PRODUCTS March 22, I promised that in the next edition the manufacturers would be fully informed on the Engineering Club that is being founded by the National Lime Manufacturers' Association. To do this it will be necessary to explain just how the idea of forming this club originated.

The birth of the idea occurred at one of the most interesting sessions that the National Lime Manufacturers' Association has ever had, and one that it would have repaid any manufacturer who is striving to put his plant on a more economical operating basis to attend.

At that meeting, held in Chicago February 6 and 7 of this year, there were several very valuable papers offered. The first was by T. E. Fleischer of Sheboygan, Wis. Mr. Fleischer needs no introduction to any lime manufacturer who has been attending the meetings of the National Lime Manufacturers' Association. He is one of the pillars of the national association, and is now a member of the executive committee. Mr. Fleischer has recently completed a battery of new kilns that were erected under the plans of the Combustion Utilities Company, and his paper related his experience with the Combustion Utilities Company's system.

This was followed by a paper offered by Charles Ekstrand, who is a member of the American Society of Mechanical Engineers, and also associate member of the American Institute of Electrical Engineers. This paper covered a line of experiments, with data showing results, etc., of the application of the Eldred process to the burning of lime, as exemplified at Lowell M. Palmer, Jr.'s, plant at York, Pa., as improved by Mr. Ekstrand. Following this was a talk by William Sewell of Sunderland, England, on a type of kiln that he is operating at Fulwell, England, known as the "Spencer patent kilns." Mr. Sewell is the manager of the Fulwell Lime Works, and is an engineer of high standing in England, who is traveling in the United States to look up the question of hydrating plants and economical limekilns.

After this came a paper on the "Doherty Gasifier," by Charles Nisbet Latta, a Combustion Utilities engineer. Then another paper by A. C. Seward of Toledo, O., another eminent combustion engineer, on "Gas-Fired Kilns." These different papers, dealing directly with the most important question at this time to all manufacturers, the cheapest way to burn lime, seemed to rouse the association, and an intellectual cross-fire debate and a relation of experiences was participated in that brought out points and facts that were worth a trip (as Mr. Sewell stated), for any man interested in them, to take from England to Chicago.

Peter Martin, former president of the National Lime Manufacturers' Association, and now president of the Ohio and Western Lime Company, which covers eight or ten lime plants in Ohio, opened the ball by telling his experience with the Eldred process, and giving it an eye the color of indigo. He told how he installed the Eldred process at a cost of $3,500 and how it had turned out for him an absolute failure. This was countered by Messrs. Ekstrand and Fleischer's papers, in which these gentlemen showed that, at their plants, the Eldred process had given such results as six pounds of lime to one pound of coal, and an out-turn of twenty-five tons of lime per day per kiln, and Lowell M. Palmer, Jr., offered to allow any member of the National Lime Manufacturers' Association and, in fact, invited them to visit his plant at York, Pa., and there verify the statements made by Mr. Ekstrand. Mr. Palmer is president of the Palmer Lime and Cement Company and has adopted the motto, "Results at any cost: quality first, and prices will follow."

THEODORE E. FLEISCHER, SHEBOYGAN, WIS.

Charles Warner of Wilmington, a former president of the National Lime Manufacturers' Association, who might be termed the "pioneer of progress in the manufacture of lime," gave a brief history of the splendid results obtained for him by the Eldred process, Mr. Warner having applied the process along much the same lines as Mr. Ekstrand, with induced draft, when A. A. Stevens of Tyrone, Pa., who is known as the "Napoleon of the lime business," operating 80 kilns in the Tyrone district, took a fall out of the gentlemen who had delivered papers on gas producers, telling about certain producers he knew of that had only made 200 bushels to the kiln per day, which aroused Lowell M. Palmer, Jr., to state that he did not believe that the process of firing kilns with gas was either practicable or possible, stating logical reasons for his belief. This brought Mr. Dittlinger of Texas, a new but aggressive member, into the field, who stated that he believed that the gas producer was the proper way to burn lime, and gave figures that would justify this, and further stated that he was going to make the gas producer a success. Another member stated results that he had had with the use of induced draft and steam, in line with the best results obtained by the Eldred process and the gas producer, and so the battle waged back and forth. Then Mr. Sewell took the floor and gave a succinct description of the Spencer patent kiln, used by him in England, without the use of induced draft, the Eldred process, steam, or the gas producer, and which gave results equal to any that had been shown. This brought Mr. Curtain (who is the owner of the Farnham-Cheshire Lime Company, whose product is recognized as the finest finishing lime in the United States) to his feet, with the query: "What is the use of all these different processes, when Mr. Sewell could arrive at such a result with a kiln without them?"

PETER MARTIN, HUNTINGTON, IND.

Irving Warner, the manager of the "Cedar Hollow Lime Plant" (better known as the apple of Charles Warner's eye), put Mr. Sewell through a course of questions which elicited responses that threw a shadow of doubt on whether the Spencer patent kiln would be of value in the United States or not, and then Colonel Cobb of St. Louis, who the lime manufacturers of the United States feel should be Ambassador to the Court of St. James, on account of his splendid diplomatic qualities as proven by his invaluable work for the Eastern lime manufacturers (but this is a story I am going to keep for the future, and is an interesting one on the value of organization), took the floor and focused all the arguments by a short, concise summing up of the entire situation. This caused Mr. Stevens to speak up, and before he sat down he had developed the thought that it would be better for the Lime Manufacturers' Association to spend its money in finding out for its membership which of these processes was the best for the lime manufacturers, than to spend its money in endeavoring to bring more members into the National Lime Manufacturers' Association.

Mr. Newton of Chicago, the president of plants that cover upward of one hundred kilns scattered through Illinois, Wisconsin and Missouri, promptly arose and seconded Mr. Stevens' thought, and further developed it so that the president was asked to name a committee to prepare some plan and offer it to the association that might be worked out and that was practicable. On this committee were placed Mr. Hill of Kansas, also the president, and the owner of a long string of plants, and known as one of the ablest organizers in the West, Mr. Fleischer, Mr. Palmer and Mr. Warner. These gentlemen brought in a report that the National Lime Manufacturers' Association should establish an auxiliary association, to be called the Engineering Club, and that members of the association should guarantee a sum to be expended on the organization and development of the club, at the same time stating that it was not imperative that any member who did not wish to join the club should be a subscriber. But before this report had been made papers had been offered by H. O. Duerr on "Specifications on Lime for Use in Sand-Lime Brick Manufacture," by H. E. Bachtenkircher on "The Manufacture and Plasticity of Hydrated Lime," and by J. G. Goosman on "The By-products of Lime," which elicited a discussion on the possibility of increasing the field for the use of lime. This debate finally resulted in a resolution that the proposed Engineering Club should not only be formed for the study of plant problems, but should be used to investigate the field for new uses of lime. Mr. Duerr, in his article, pointed out some of the troubles encountered in the manufacture of sand-lime brick, and his paper was particularly valuable, as he has a practical as well as scientific knowledge along the line of his business. Mr. Bachtenkircher, who is a chemist in charge of Dolese & Shepard's laboratories in Chicago, has made a particular study of hydrated lime, and his suggestions were very valuable. Should they be developed by the Engineering Club, the plasticity problem will be overcome, I believe. Mr. Goosman, who is a mechanical engineer of Chicago, and has written several very able scientific books, pointed out a new field of economy about the plant, viz.: the saving of carbonic acid gas, so that it will be seen that the Engineering Club has another definite, large and extensive field for operation, and great good can be accomplished by it for the manufacturers.

The resolution that the Engineering Club should also investigate the field for new uses of lime was duly adopted. Then Mr. Hunkins of St. Louis, the head of the Hunkins-Willis Company, probably one of the largest dealers in building materials in the United States, entered the fray, backed by Mr. Lauer of Rochester, N. Y. (who, by the way, has made his pile, and was on his way south to spend the winter months in St. Augustine, Fla.), to safeguard the interests of the small manufacturer by having the following resolution adopted:

That members of the Engineering Club must first belong to the National Lime Manufacturers' Association, the dues of which are $25 per year; that the dues to the Engineering Club should be based on a fair plan, possibly upon the kiln capacity, which would mean that the smaller manufacturers would pay for the information they received pro rata as the larger manufacturers would pay.

To sum up the proposition, the Engineering Club is to be handled along the broadest lines, so that no particular section of the United States will have its problems developed before any other section. In

other words, the East feels that its greatest necessity is the development of the gas producer; the West feels that the hard wall plaster competition must be met; the South wants information on kiln construction; the North to work out the hydrated problem, and every manufacturer who has a high calcium lime wants information on how to get a plastic hydrate.

It is, therefore, the intention of the Engineering Club to employ a very high-class chemical engineer, one that cannot be dominated by any particular person or section and who will have initiative, discrimination and discretion.

His first work will be to make a trip throughout the United States to the lime centers and find out from each locality what its necessities are. He will then take up these different problems and work them out, and at the same time will establish a bureau that every manufacturer can apply to for information, suggestions and help on the petty troubles about his own plant.

The committee on working out the details of this club are A. A. Stevens of Tyrone, who represents the high calcium limes; Charles Warner of Wilmington, who represents the dolomite limes, and A. Newton of Chicago, who represents the great West. In the hands of these gentlemen it can be predicted that a man of the widest experience, strongest personality and highest mechanical and technical skill will be employed. He will take the position to the Engineering Club that a general manager does to a commercial enterprise. He will be under the general direction of the board of directors of the Engineering Club, but will not be hampered by too minute or detailed instructions that would hamper his initiative or deflect his energies.

Mr. Stevens closed the discussion with the following statement: "This is a splendid arrangement Every member of this association shall have an opportunity to come into the auxiliary association, known as the Engineering Club, and enjoy all of the benefits by the making of an equitable arrangement, so that no one can say he has not had an opportunity to become a member."

This is the history of the founding of the Engineering Club, and I would like to ask you, Mr. Manufacturer, can you afford to be on the outside looking in, instead of being on the inside looking out, when such a plan for the development and uplift of the general business is on foot? Is it fair to yourself or to your business, when you are invited and welcomed as a member, and your dues are only $25 per year, to remain out of such an organization and not to be present at the discussion or to enter into the discussion of the lime business in all its phases, with men of experience and knowledge? *Can you afford it?*

We want you in the association because we feel that not only will we benefit you, but you will benefit us.

Colonel Cobb, in a speech he made, stated that "where he had given one idea to the association he had received five." The one idea spread over all the membership, the five only came to himself; so it is a matter of calculation who was most benefited, Colonel Cobb or the association. Thus you will see we are not altogether unselfish in our wish that you become a member. There is another point that the members of the National Lime Manufacturers' Association feel: It is only by united effort that we can put the lime business on such a footing as the steel and cement business, and we want such an improvement in methods as will enable us to successfully meet the inroads of cement and hard wall plaster. This cannot be successfully done by the development of a few plants. It will require the development of every lime plant in the United States. So wake up and get busy.

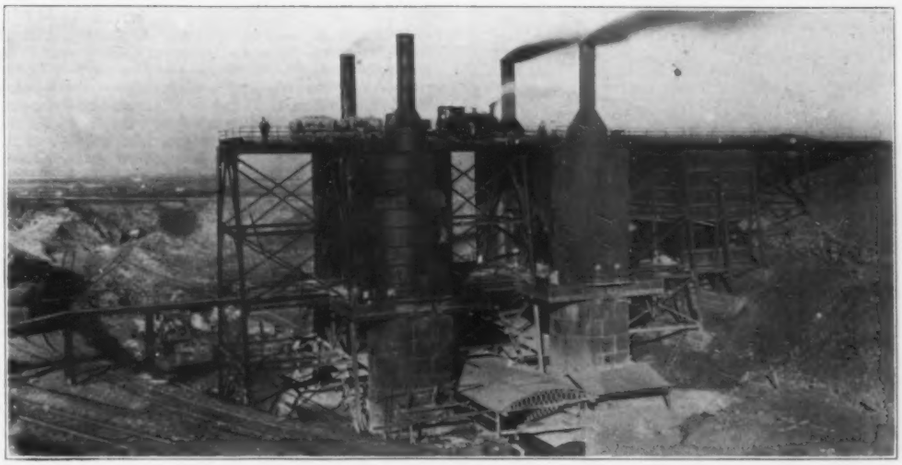
I am not yet done addressing the manufacturers, and if ROCK PRODUCTS will allow me, in its next issue I will say a word on organization.

I close this letter by stating to you that the initiation fee for joining the National Lime Manufacturers' Association is $25, which also pays your dues for one year. Yours truly,

WILLIAM E. CARSON,
President of the National Lime Manufacturers' Association of the United States.

Progressive English Lime Concern.

William Sewell, of Sunderland, England, who gave a most interesting talk before the last session of the National Lime Manufacturers' Association, writes under date of March 23 that he is pushing on with the arrangements for the new hydrating plant at the Fulwell Quarries and Limeworks, Sunderland, and promises to send photos of it when finished and advise ROCK PRODUCTS readers how they are getting on. This plant, which is the first of the kind in the Old World, is a Kritzer hydrater, and no doubt other European manufacturers will soon follow Mr. Sewell's example. For the present Mr. Sewell sends a photograph, which is herewith reproduced, of a group of four Spencer kilns, together with the following description:



THE FULWELL LIME WORKS, SUNDERLAND, ENGLAND.

The locomotive standing on the level of the charging floor hauls the stone in five-ton side-dump cars up a four per cent grade from the quarry below. The coals are taken up in the railway cars in the same way and dropped through the bottom doors into the coal hoppers. The large storage hopper, holding 200 tons, can be seen at the right of the kilns, but there are service hoppers, holding about two carloads, on the sides of the kilns themselves. The upper fire hole is on the inside of the kiln about the level of the longitudinal bracings. The main firing gallery is seen about half way down. You will notice a fireman standing by the side of the fire-hole door on the left of the left-hand kiln. There is a fire hole at each end of the kilns on this gallery. There are four drawing eyes at the bottom, two on each side of the kiln. These are not seen in the picture, but they are on a level with the top of the railway car, which can be seen standing loaded with lime in front of the kilns and partly under the lattice roof. The outside dimensions of the kilns are 20 feet by 16 feet and the height from the level of the loading line below to that of the charging line above is 73 feet.

The stacks are 4 feet diameter and 20 feet high. The average annual output of these kilns at Fulwell is 11,500 American tons. The fuel consumption is 5.54 pounds of lime to one pound of coal over the four kilns, the best of the four giving 5.74 pounds of lime. Three men operate one kiln, charging, burning, drawing and loading the lime into railway cars, at a cost of about 11 cents per ton. The kilns are only worked during the day and are shut down from midday on Saturday till Monday morning.

Still Use Lots of Wood.

NORTH ADAMS, MASS., April 6.—The New England Lime Company's plant at Feglonite has accumulated about 4,000 cords of fire-wood and is continuing the operation so as to get all they can before the close of winter timbering possibilities. The lime kilns are all equipped with a patent oil burner, which is used after the supply of wood becomes exhausted.

O. B. Ellis has disposed of his limekilns in Waterloo and Wellington counties, Hespeler, Can., to Christie, Henderson & Co., lime dealers.

The New York Central Railroad is negotiating with the Indians of the Tuscarora Reservation, New York, for the privilege of working the limestone deposits on the Indians' property.

The Lake Stone and Manufacturing Company, Bay Springs, Miss., has recently begun the development of 1,100 acres of limestone land, and contemplates installation of machinery for working fireproof clay and of limekilns.

The hydrating plant erected some three years ago by the Union Lime Company at Buffalo, N. Y., is rapidly coming to the front. It is reported that during the month of March they turned out 5,000 barrels of hydrated lime.

A limestone quarry will be opened in East Pikeland, Pa., within a short time on the Wesley Emery place. Among those interested in the venture are Samuel Buckwalter, of Pickering, and S. F. Bronson, of Kimberton, Pa.

The Rush Tower Stone and Lime Company has purchased 200 acres of stone land on the Memphis and Southeastern Railroad, thirty miles from St. Louis. The company will erect a crushed-stone and limeburning plant. The incorporators of the company are C. F. Busch, A. S. Mittelberger and Frank Mize.

The Economy of Vertical Limekilns.

BY E. W. LAZELL, PH. D.

The economy of burning lime should interest every manufacturer of lime. This means the amount of fuel used to produce a unit of lime. Any saving that can be introduced in the fuel used will directly lessen the cost of producing lime, provided there is no increase in the labor employed and that the cost of installing the means of effecting the saving is not too great.

It was with a view of learning just how the heat generated by the burning fuel was used; how much was actually doing useful work; how much was wasted by being withdrawn with the lime; how much was wasted by the stack gases and radiation, that the two tests below were undertaken.

The first test was of one vertical kiln for a period of twenty-four hours, and the second test was a battery of six kilns and covered a period of 150 hours' continuous operation. Each test was as complete as circumstances would permit. A short description of the two types of kilns is given below, together with the data from which the economy of the kiln is calculated.

Test of One Vertical Kiln.

The kiln tested was the end one of a battery of four. All of these kilns had masonry foundations, and the masonry was continuous to the top of the fire boxes. Above the fire boxes the kilns were circular and encased in steel plate. The walls were heavy and were continuous for the four kilns, the steel plate of one kiln joining that of the next, thus doing away with considerable radiating surface. The end kiln tested naturally joined the battery of kilns only on one side, and thus had the largest amount of radiating surface. The coolers connected with each kiln extended some distance below the grates and were contained in the masonry foundations.

The limestone was charged into the kilns at the top, and the burned lime was drawn from the cooler through iron doors. Ducts were built in the masonry foundation around the cooler and air was drawn through these and forced below the grates of the fire boxes; thus a part of the heat contained in the burned lime was returned to the kiln. The top of the kiln was closed with tight-fitting iron doors, and suction draft was employed. The Eldred process of burning was used; that is, a part of the stack gases was taken from the exhaust pipe, mixed with air and forced by means of a blower into the ash pit below the fire box. The firing was done by hand and was accurately regulated so that coal was added every twenty minutes, and the burned lime was drawn every four hours.

The following data were obtained on a twenty-four hour continuous test of the end kiln in the battery of four, and as no previous arrangements had been made at the plant, and as the results were obtained on a regularly operated kiln, they may be assumed to indicate the average efficiency of the kiln:

Chemical Data.

COMPOSITION OF LIMESTONE.

	Per cent.
Silica (SiO_2)	1.30
Alumina and iron oxide (R_2O_3)	.94
Lime (CaO)	30.40=54.28$CaCO_3$
Magnesia (MgO)	20.08=42.16$MgCO_3$
Carbon dioxide (CO_2)	45.96
Moisture	1.06

This stone was a fairly pure dolomite.

COMPOSITION OF BURNED LIME.

Silica (SiO_2)	2.48
Alumina and iron oxide (R_2O_3)	1.16
Lime (CaO)	56.71
Magnesia (MgO)	38.86
Loss on ignition	1.02

COMPOSITION OF COAL USED.

	Per cent.
Moisture	.86
Ash	6.23
Sulphur (S)	2.68
Carbon (C)	77.25
Hydrogen (H)	5.18
Nitrogen (N)	1.54
Oxygen (O)	6.26
Calorific value (by calorimeter)	7907 calories

COMPOSITION OF STACK GASES, AVERAGE OF SIX DETERMINATIONS.

	Per cent.
Carbon dioxide (CO_2)	18.11
Oxygen (O)	8.47
Carbon monoxide (CO)	.53
Nitrogen (N)	72.90

COMPOSITION OF MIXED GASES, AVERAGE OF SIX DETERMINATIONS.

	Per cent.
Carbon dioxide (CO_2)	9.96
Oxygen (O)	14.50
Carbon monoxide (CO)	.13
Nitrogen (N)	75.41

Experimental Data.

Amount of lime burned in 24 hours	15,439	kilos
Amount of coal burned in 24 hours	3,488	kilos
Average amount of lime produced per hour	643.4	kilos
Average amount of stone burned per hour (calculated)	1,214.2	kilos
Amount of lime produced per kilo of coal burned	4.42	kilos
Amount of coal burned per kilo of lime produced	0.226	kilos
Number of calories required to produce 1 kilo of lime	1,878.8	

Note.—In the following calculations no allowance has been made for the amount of ash or cinder drawn.

Temperature Determinations.

Temperature of discharged lime, average 3 determinations	700° C.
Temperature of stack gases, average 6 determinations	268° C.
Temperature of mixed gases entering ash pit, average 6 determinations	112° C.
Temperature of outside air	3° C.

Temperature of Outside of Kiln.

Temperature of masonry around fire box	32° C.
Temperature of steel shell half way up	24° C.
Temperature of steel shell at top of kiln	47° C.
Temperature of cooler	113° C.
Temperature of lime in kiln between firing arches, taken by means of Fery radiation pyrometer, average of 7 determinations	1,150° C.
Draft gauge readings, average 7 determinations:	
Suction draft	0.5"
Top of kiln	0.2"

The object of the test was to calculate the heat balance of the kiln and to determine as closely as possible the amount of heat lost in the stack gases, excess air, etc.

The items of the heat balance are as follows:

Heat Developed.

1—Theoretical heating power of the fuel	1,149,148	calories
2—Heat returned by the mixed gases	59,707	calories

Heat Distribution.

Total heat developed ..... 1,208,855 calories

	Calories.	Pct.
1—Heat withdrawn by the burned lime	107,628	8.93
2—Heat withdrawn by stack gases:		
(A) in necessary products of combustion	207,998	17.26
(B) in the excess air	117,183	9.69
3—Heat lost by imperfect combustion	57,872	4.79
4—Heat required to expel moisture in stone	7,560	.62
5—Heat required to expel carbon dioxide from calcium carbonate	297,540	24.61
6—Heat required to expel carbon dioxide from magnesium carbonate	178,621	14.77
7—Heat lost by radiation and conduction by difference	234,452	19.39

Note.—The unit of time chosen in making this heat balance was one hour and all calculations were based on this.

It will be seen from this balance that there are four possible sources of economy.

1. If the burned lime was cooled to 100° C., in place of being discharged at 700° C., there would be a saving of 92,650 calories.

2. If the stack gases were cooled to a temperature of 110° C., in place of being withdrawn at 268° C., there would be a saving of 193,882 calories.

3. If the combustion was perfect, 57,872 calories would be saved.

4. While the walls of this kiln were heavy, there should be some possible and feasible method of saving part of the heat lost by radiation and conduction, either by using better heat insulating materials, the introduction of confined air spaces or the partial recovery of this heat and its return to the kiln.

The first three items which it is possible to save would represent a saving of 344,404 calories, equal to 28.49 per cent of the heat generated. This would mean a saving of just this amount of coal, or the production of one kilo of lime with 0.162 kilos of coal, equal to a production of approximately six tons of lime with one ton of fuel.

It might be possible to save some of the heat carried away with the excess air by reducing the amount of excess air. In this kiln there is lost by this means 9.69 per cent of the heat generated. As the excess air, however, is not larger than that required for good combustion, it would hardly seem practicable to save much of this loss.

In connection with this test it is interesting to note the amount of excess air in the stack gases, which is 40.7 per cent. Of the total amount of stack gases 26.4 per cent are returned to the kiln with the mixed gases. The composition of this mixed gas is 55.2 per cent stack gas and 44.8 per cent air.

It is also of value to calculate the maximum flame temperature of the mixed gases of combustion. The maximum temperature of the gases in the kiln is the temperature to which 1,208,854 calories will heat this volume of gas. If the total air and mixed gases used in this kiln would pass through the fire boxes the maximum flume temperature would be 969° C. This temperature is considerably lower than that obtained by direct determination, thus proving that all the excess air does not pass through the fire boxes, but is drawn into the kiln from around the cooler by the draft.

If only an amount of mixed gases were admitted to the fire boxes sufficient for theoretically perfect combustion the maximum flame temperature obtainable in the fire box would be 1,532° C., which is considerably higher than that obtained by direct determination.

Test of Battery of Six Vertical Kilns.

These kilns tested were of recent construction, the foundations being of masonry up to the bottom of the fire boxes, from which place the kilns were steel encased to the top. The kilns had heavy linings and the distance from the bottom of the grate bars to the discharging doors was greater than in the first test, therefore it was possible to recover a large amount of the heat contained in the burned lime. The stone was charged into the kilns at the top and the tops of the kilns were closed with tight-fitting iron doors, suction draft being employed. The burned lime was drawn from the bottom of the kilns through iron shears. In the masonry foundations below the fire boxes airducts were introduced, and air was drawn through these and forced by means of steam into the ashpit below the fire boxes. Part of this preheated air could be introduced over the firing-arches. Each kiln had four fire boxes arranged in pairs opposite each other. Coal was added to the fires every half hour and the burned lime was drawn every five hours. The data given below were obtained on a continuous test of 150 hours and should represent the economy of the plant at the time the test was made. The kilns, however, had been in use only a short time and had not reached their maximum efficiency.

Chemical Data.

The limestone used had the following composition:

	Per cent.
Silica (SiO_2)	1.52
Alumina and iron oxide (R_2O_3)	.36
Lime (CaO)	54.38=97.10 $CaCO_3$
Magnesia (MgO)	.62= 1.30 $MgCO_3$
Carbon dioxide (CO_2)	43.40
Combined water	.10
Moisture	1.10

The rock therefore was a very pure high calcium limestone.

The burned lime would have the following composition (calculated):

	Per cent.
Silica (SiO_2)	2.69
Alumina and iron oxide (R_2O_3)	.64
Lime (CaO)	96.24
Magnesia (MgO)	1.06

The coal used had the following composition:

	Per cent.
Moisture	1.09
Ash	13.21
Sulphur (S)	2.74
Carbon (C)	64.72
Hydrogen (H)	7.72
Nitrogen (N)	.52
Oxygen (O)	10.00
Calorific value (by calorimeter)	8019 calories

Average analysis of stack gases:

	Per cent.
Carbon dioxide (CO_2)	12.40
Oxygen (O)	11.00
Carbon monoxide (CO)	.50
Nitrogen (N)	76.10

Experimental Data.

Lime produced in 150 hours	808,152	lbs.
Lime produced per hour	5,387.7 lbs.=2,449	kilos
Lime burned per hour (calculated)	9,535.7 lbs.=4,334.4	kilos
Coal used in 150 hours	183,210	lbs.
Coal used per hour	1,221.4 lbs.= 555.2	kilos
Lime produced per kilo of coal	4.41	tons
Amount of coal required to produce 1 kilo of lime	0.2267	
Calories required to produce 1 kilo of lime	1,818	

Temperature Determinations.

Temperature of discharged lime	124° C.
Temperature of stack gases	312° C.
Temperature of outside air	11° C.
Temperature of lime between fire boxes, taken by means of Fery radiation pyrometer	1,260° C.
Draft	0.6"
Amount of steam used per kilo of coal burned	0.5 kilos

The items of the heat balance sheet on this test are as follows. Unit of time one hour, as in the first test:

1—Heat generated ..... 4,452,149 Calories. Pct.

Heat Distribution.

1—Heat removed by lime burned	66,417	1.49
2—Heat removed by stack gases:		
(A) in necessary products of combustion	720,323	16.17
(B) heat removed by excess air	629,331	14.13
3—Heat lost by imperfect combustion	191,681	4.35
4—Heat required to expel moisture in stone	27,977	.62
5—Heat required to expel carbon dioxide from calcium carbonate	1,899,803	42.67
6—Heat required to expel carbon dioxide from magnesium carbonate	19,580	.43
7—Heat lost by radiation and conduction by difference	897,336	20.15

Treating this heat balance as in the first test, it will be seen that:

1. There is comparatively little heat removed by the lime burned.

2. If the stack gases were cooled to a temperature of 110° C., in place of being discharged at 312° C., there would be a saving of 905,748 calories.

3. If the combustion was perfect there would be saved 191,681 calories.

4. The remarks made under the first test will apply here.

The heat lost under items 2 and 3 which it would be possible to save would represent a total saving of 1,097,429 calories, equivalent to 24.6 per cent of the fuel burned. This would mean the saving of a corresponding amount of coal or the production of one kilo of lime with 0.171 kilos of coal, equivalent to the production of 5.85 kilos of lime with one kilo of coal, or about 5.8 tons of burned lime per ton of coal burned.

As 0.5 kilos of steam were used in the combustion of one kilo of coal, this would represent the use of 277.6 kilos of water in the form of steam generated at a boiler pressure of 80 pounds. It would require 136 kilos of coal with average boiler efficiency to generate this amount of steam. This amount of coal should be added to the coal used in the kiln to obtain the total coal used for the production of lime; adding this amount the production of lime becomes 3.54 kilos per kilo of coal burned.

It is of interest to calculate the maximum flame temperature with the assumption that all the air used passes through the fire boxes. This would give a temperature of 935° C. Since the temperature as determined directly was greater than this, all of the air cannot have been passed through the fire boxes. This was known to be the case as the kiln was arranged for the introduction of a secondary supply of preheated air directly over the arch of the fire boxes.

There is present in stack gases of this kiln 6,623 cubic meters of air, equivalent to an excess of 49 per cent. Part of this excess air could be advantageously reduced without affecting the combustion and considerable economy in the use of coal would result.

Eckel states in the "1906 Mineral Resources of the United States" that it requires 1,887.15 B. T. U. to produce one pound of lime. This is equivalent to 1,048.4 calories. The first kiln tested was, therefore, wasting 1,878.8—1,048.4 equals 830.4 calories for every kilo of lime produced, equivalent to a loss of 44.2 per cent.

He further states that the average amount of coal required to produce one short ton of lime is 622 pounds, equivalent to a production of 3.2 tons of lime per ton of coal burned. Kiln No. 1, therefore, produced 4.42—3.2 equals 1.22 tons of lime per ton of coal burned better than the average practice.

In the second test the six kilns required 1,818 calories to produce one kilo of lime; thus they showed a loss of 1,818—1,048.4 equals 769.6 calories per kilo of lime produced, equivalent to a loss of 42.3 per cent. These six kilns produced 4.41 kilos of lime per kilo of coal burned and were, therefore, producing 4.41—3.2 equals 1.21 tons of lime per ton of coal burned better than the average.

From tests similar to these it is possible for an engineer familiar with lime burning to introduce new economies and to modify existing kilns so as to give a greater efficiency, or to design new kilns embracing improvements which the tests have indicated. It is only by such investigations of existing kilns that it is possible to improve the burning of lime to the desired extent.

It would, therefore, seem as if it behooved each manufacturer of lime to carefully investigate the economy of his burning, employing for this purpose skilled talent, with a view to introducing economies and increasing the efficiency.

In conclusion I wish to express my indebtedness and thanks to my associates, Henry S. Spackman, William R. Oglesby and E. L. Conwell, for their assistance in the preparation of this paper and my appreciation of the courtesy of the manufacturers in allowing me to furnish the results.

New Incorporations.

At Millville, Jefferson County, W. Va., the Harper's Ferry Lime and Stone Company. Capital, $50,000. Incorporators: William M. Rees, D. A. Rees, James D. Callery, F. A. Dohrman and J. H. Blackmore, all of Pittsburg, Pa.

The Crab Orchard Lime Works was incorporated at Crab Orchard, Tenn., with $10,000 capital stock, by L. G. Young, R. M. Standefer, C. W. Julien and others.

Plasterers Organize.

WATERLOO, IA., March 31.—The plasterers and contractors of Waterloo, Ia., held a meeting last night in Central Labor Hall for the purpose of organizing a union in this city. E. G. Pullen, who called the meeting to order, stated that the purpose of the meeting was to form a local branch of the Operative Plasterers' International Association. This object, it was stated, was to better the craft and not to increase wages.

Progressive Indiana Plant.

FT. WAYNE, IND., April 10.—The main plant of the Fishack Plaster Company here is equipped with modern improved machinery and has a capacity of three carloads daily. They have been established here only a short time, but have built up an extensive and growing trade and are now said to be the third largest shippers from this point. The company produces its own raw stock at Port Clinton, O., where they have extensive mines and mills. Their main plant is at Toledo, where also are located their general offices. They are also pumpers and shippers of lake sand and gravel.

The local offices of the Fishack Plaster Company are in charge of E. M. Fishack, manager, while its interests in Northern Indiana, Michigan and Western Ohio are looked after by H. F. Fishack.

Work Begun on New Wood Fiber Plant.

STATESVILLE, N. C., April 7.—Work has begun on the plant of the Statesville Plaster and Cement Company on the site near the Statesville Safe and Table Company, which the company purchased some time ago. The building material is on the ground and the work will be pushed to completion. The company hopes to be ready for business before the first of June. The main building of the plant will be 40x60 feet, with two stories. There will be other small buildings. The company will manufacture wood fiber plaster and will handle cement.

Plaster Plant Changes Hands.

WATERLOO, IA., March 28.—The Waterloo Plaster Company, which was formerly the Western Elyria Wood Plaster Company, again changed hands last week, this time coming into the possession of Del. F. Scholes of this city. Mr. Scholes purchased the plant from J. H. Hildebrand, B. S. Harrison and some other parties and will endeavor to increase the business of the company, giving it all of his time and personal attention. The company was organized a little over four years ago as the Elyria Wood Plaster Company, and has operated under that name until recently. The business has prospered from its beginning, having an output daily of forty tons. The company's operations extend over a large territory.

The Fairmont Wall Plaster Company.

The Fairmont (W. Va.) Wall Plaster Company is about completing its new warehouse, a picture of which is shown herewith. The building is 50x120 feet, two stories, and fireproof. The blocks are concrete, made of Lehigh Portland cement on a Cotton machine. About 500 barrels of cement were used. The blocks are firmly glued together by cement being poured through the cores, thus making one solid wall. The roof is of composition and as near fireproof as possible. The floors are of cement.

The Fairmont Wall Plaster Company was incorporated in 1900 under the laws of West Virginia. They manufacture wood fiber, neat cement and sanded wall plaster. Their mills are located in Fairmont (a picture of this is also shown herewith) and at Port Clinton, O. They are selling agents in West Virginia for Lehigh Portland cement and for the Cottom machine (Dayton, O.) The company also manufacture cement blocks, which are shipped to all parts of the State. Switches run the entire length of their buildings. These, together with the river transportation, give them excellent shipping facilities.

FAIRMONT MILL OF THE FAIRMONT WALL PLASTER COMPANY.

The officers of the company are: President, O. J. Flemming; vice-president, A. R. Black, Cleveland; treasurer, J. R. Spease; secretary, W. T. Black; manager, J. M. Black. The company is doing an excellent business.

New Mill Put in Operation.

RAPID CITY, S. D., April 4.—The new mill of the Black Hills Gypsum Products Company near this city has begun operations, making a fine grade of hard wall plaster. The plant, which has a capacity of 48 tons per day, is located about two miles northwest of the city along the Northwestern Railroad. The officers of the company are: D. Davis, president; W. S. Stewart, vice-president and superintendent, and F. C. Adams, secretary and sales manager.

The factory building is 40x100 feet, and 40 feet high in the center. Power is furnished by a 140-horsepower boiler and a 100-horsepower compound engine. The gypsum rock is secured on the hillside in the rear of the factory and is taken into the building on a dump car operated on a narrow-guage track something over 200 feet long. In the near future a complete electric plant will be installed so that good light may be had afternoons and for night service if it should become necessary to operate the plant at night.

George Marquardt is in charge of the plaster machinery and has had 17 years' experience in that work. He recently came to this city from Ft. Dodge, Ia. C. E. Wrightson is the engineer, and he recently came from Chippewa Falls, Wis.

The company have 80 acres of land with almost inexhaustible deposits of gypsum rock. Even before the plant was started many orders for plaster had been received and the business begins under flattering auspices.

WAREHOUSE OF THE FAIRMONT WALL PLASTER COMPANY.

Buys Fire Pulp and Plaster Plant.

LOS ANGELES, CAL., April 7.—Samuel Lazarus, owner of the Acme Cement and Plaster Company of St. Louis, has purchased the plants at Palmdale and Los Angeles of the Fire Pulp and Angelus Plaster Company.

The industry which Mr. Lazarus has purchased, and which will probably be run under the name of the Acme Cement Plaster Company, although the selection of a name is not as yet quite agreed upon, makes all kinds of plaster for interior work mainly. Its specialty is ornamental work for columns and corbels, and it has heretofore done a very fair business, but mainly in this immediate vicinity.

Notes on Organization.

BY JOHN WATERS.
Secretary of the International Employing Plasterers' Association.

Many inquiries on the subject received within the past few months incline me to enter the literary field and to appoint myself the spokesman of my colleagues in trade, and I will endeavor with their authorization to answer from my viewpoint the question, What is organization?

Geologists teach us the early organization of the earth from a hot and molten mass to a substance fit for habitation. Primitive man next makes his appearance on the earth to make it his abode. What is his first impulse? He immediately organizes himself and neighbors into a congregation for offense and defense, which he calls a tribe. His next venture is that of conquest. There is animal life on his place of habitation and it must be exterminated. We watch this organization of early man, and though crude as it is, we see it rise victorious over the unorganized form of animal life.

JOHN WATERS, NEW YORK.

We will now gradually ascend the inclined road of time, and in our passing views we see the cloud of war hovering on the horizon. We watch the nation, well organized in its resources, force its antagonist back with comparative ease. We see the dark night of war with its devastation fold her mantle as the morning light of peace dawns on a treaty made possible through the organized efforts of neutral powers.

We now emerge into the clearing made by the opening of the past century and we find ourselves face to face with the figure of "Labor." What a spectacle she presents slumbering alone and deaf to every entreaty to arise!

We watch her in her lethargy, when suddenly we discover a faint tremor; she is awakening, she arises, rubs her eyes and looks about her; she looks backward, and suddenly the lesson taught by man with his splendid organization in war and peace dawns upon her. Without organized effort there can be no success; she too will organize and make her organization one of the most powerful throughout the civilized world.

We see her reach out her arm and beckon to the son of daily toil. He accepts her invitation and takes his place within her protecting grasp. So piece by piece the fabric of organized labor has been woven till today we see not only the employee organized, but we find the other branch of labor, the employers, fast organizing, for they too have learned the lesson that without organization no success can ever be attained.

So we have the twentieth century dawning on a new era in the labor field, an era destined to put Labor on a pedestal high above its fondest dreams, to be guarded by the figure of the organized manual toiler of the day standing shoulder to shoulder with the organized mental worker of the day and night, each protecting the common interests of the other and above all having the good cause of his *alma mater*, Labor, at heart for all time.

The good done by the International Employing Plasterers' Association has surpassed our fondest dreams. Through our organization we have been enabled to collect for our members claim upon claim which they considered irrevocably lost. We adhere to and advance our belief that this class of organization is the best insurance a contracting and employing tradesman can carry to protect his well earned interests from being swallowed and digested by unscrupulous building operators.

The premium on this class of insurance is small, the policy gigantic in its scope of usefulness. Therefore my advice to you from the standpoint of an organizer is this: Work; spend every minute of time you have to spare laboring for your organization, for it means your very livelihood.

If you are not organized act at once, force your organization to its highest pitch, keep it there, and you will find that the results will more than pay for the effort.

Receiver for Plaster Company.

PITTSBURG, PA., April 14.—In an equity suit brought by the Interstate Gypsum Company of Buffalo and Addison F. Allen of Warren, O., Judge Buffington of the United States Circuit Court has appointed Charles H. Reed receiver of the Pittsburg Plaster Company, directing him to wind up the business. The capital stock of the company is $75,000.

Notes on Plaster.

Le Chatelier, the celebrated French chemist, is the authority for the following notes on plaster:

It is fully demonstrated that pure, ordinary, plaster of good quality, e. g., molding plaster, is not anhydrous calcium sulphate, as has been admitted hitherto, but a definite hydrate.

The temperature of the calcination of plaster differs from its temperature of dissociation and it is always higher than the latter; it is independent of the pressure; it is not theoretically susceptible of being precisely determined, but varies within rather narrow limits comprised between 120° and 130° C.

The crystallization which accompanies the hardening of mortars results from the difference in solubility of the bodies which set and those which are formed during the set; the former occurring in a state of unstable equilibrium in the presence of water and being able to exist there only momentarily.

The crystals which are formed during the hardening are frequently, if not always, extremely small crystals, slender prisms, joined by one of their extremities around central points in such a fashion as to form small spherical groups.

To Make a New Plaster Board.

FORT DODGE, IA., April 7.—Definite announcement was made today that the Plymouth Gypsum Company of this city would build a plaster board factory on their property adjoining this city this season. The new plant will have a capacity of five cars per day. The product will be their own patent, which has been but recently perfected.

The same company is giving serious consideration to constructing a pottery on the same property. Raw material now being used in their sewer pipe plant has been thoroughly tested and found to produce a high grade of ware.

Successful Nevada Plant.

SAN FRANCISCO, April 17.—The Empire Plaster Company have their office at Sixteenth and Harrison Streets. The manager, J. M. Curry, says that their plant, at which their hard wall plaster is manufactured, is located at Empire, Nev., and is equipped with the Grand Rapids machinery. The plant has been in successful operation for many years. The president of the company and principal owner is J. W. Adams of Carson, a former Governor of Nevada. Besides handling the product of their factory, the company also sells the Blue Summit brand of lime from the Union Lime Company of Los Angeles.

U. S. Gypsum Company Begins New Plant.

ELDORADO, OKLA., March 30.—The United States Gypsum Company has begun the erection of a large gypsum plant here. The cornerstone has been laid with appropriate ceremony. The plant will be one of the largest in the Southwest and will employ fifty or sixty men.

Professor Gould of the State University has said that Oklahoma contains some of the largest areas of gypsum deposits in the United States. Hence the operations of the plant here will be observed with a great deal of interest.

Device for Reinforcing Plaster.

YOUNGSTOWN, O., March 28.—A new device for reinforcing plaster, invented by C. B. Cushwa of the Youngstown Iron and Steel Roofing Company, is attracting attention. It is an improved corner bar that practically makes impossible the objectionable chipping and breaking of plaster or concrete at corners or in sharp angles.

The appliance can be manufactured cheaply enough to recommend it to general use in all kinds of building and its practicability makes it almost a necessity. The Cushwa invention has many points of advantage over any device of the kind now in use, it is said.

New Incorporations.

At Norfolk, Va., the Old Dominion Plaster Corporation. Capital, maximum, $45,000; minimum, $10,000. Incorporators: J. G. McNeal, president; C. P. Breese, vice-president; S. S. Hardison, secretary and treasurer.

At Huntington, Ore., the Northwest Gypsum Plaster Company. Capital, $100,000. Incorporators: J. H. Aitkin, C. A. Northey and John P. Hannon.

At New Bedford, Mass., the Bay State Hard Plaster Company. Capital, $3,000. Mark E. Sullivan, Frederick Isabell, John H. Ryan, Jr., incorporators.

CEMENT

MANUFACTURERS MEET.

Important Gathering in Philadelphia of Representative Officials of the Big Cement Mills and Kindred Organizations.

The Association of American Portland Cement Manufacturers held the second quarterly meeting of the year at the Bellevue-Stratford Hotel in Philadelphia, April 13-15. It was attended by delegates from thirty-seven of the fifty-six companies comprising the membership of the organization. There was also a large representation of machinery men.

The first day was entirely devoted to meetings of the Association of Sales Managers and the American Association of Licensed Cement Manufacturers. Of the former organization Albert Moyer, of the Vulcanite Portland Cement Company, presided, while Mr. Charles L. Johnson, general sales manager of the Castalia Portland Cement Company, was secretary.

The meeting of the sales managers was a most interesting and profitable one, and it is believed that the organization will be productive of much good, resulting from a better understanding between the active men composing the sales departments of the various Portland cement concerns.

All the sessions of the Cement Manufacturers' Association were closed to those not included in its regular membership, with the exception of the final session on Wednesday. Although it is understood that much important business was transacted behind the closed doors, the nature of the proceedings was not divulged.

President Lober presided over every session of the meeting, assisted by Secretary P. H. Wilson.

The customary banquet was held on Tuesday evening and many speeches were made around the festive board.

There were no technical papers read such as usually mark the sessions of the association. A matter which may be of general interest to the readers of ROCK PRODUCTS was discussed in the open session on Wednesday. This had its origin in the address of James W. Wardrop, the recently elected executive secretary of the National Builders' Supply Association. Mr. Wardrop happened to be in Philadelphia at this particular time and was invited to address the convention. He outlined the principles and work of the organization he represented and solicited the earnest coöperation of the American Association of Portland Cement Manufacturers in behalf of the work of the National Builders' Supply Association.

At the close of Mr. Wardrop's address E. M. Hagar, president of the Universal Portland Cement Company, arose to offer an objection to the policy of the National Builders' Supply Association, as outlined in its declaration of principles. Mr. Hagar stated that the attitude of the association was far more liberal than that expressed in its declaration and suggested that it be revised in such a way as to allow the cement manufacturers to sign and indorse it conscientiously. "Under some circumstances," he said, "it is absolutely necessary that cement manufacturers sell direct to the consumer, and while I know that the present policy of the National Builders' Supply Association recognizes these exceptions, it is not so stated in the declaration of principles which we shall have to sign if we attempt to coöperate fully as members in the promotion of its policies."

It was suggested by President Lober that the attention of the National Builders' Supply Association be called to this matter and that a suggestion for the revision of the declaration of principles be respectfully submitted to that association by the committee on conferences.

During the open session it was agreed that the association extend the circulation of the *Review* by taking paid subscriptions. President Lober stated that it was the opinion of the secretary that a subscription list could be raised to 2,500 or 3,000.

The next quarterly meeting of the association will be held at Atlantic City, N. J., on June 23 and 24.

THE ATTENDANCE.

Alabama Portland Cement Company, Spocari, Ala.—P. H. Moore, general manager.

Alpha Portland Cement Company, Easton, Pa.—A. F. Gerstell, vice-president and general manager; Henry Longcope, Philadelphia representative, Harrison Building, Philadelphia.

Alsen's American Portland Cement Works—R. S. Sinclair, second vice-president, 45 Broadway, New York City; W. P. Corbett, secretary and sales manager, 45 Broadway, New York City.

American Cement Company, Pennsylvania Building, Philadelphia—Robert W. Lesley, president; C. M. Camm, R. E. Griffiths.

Atlas Portland Cement Company, 30 Broad Street, New York—Alfonso de Navarro, vice-president; Howard W. Maxwell, vice-president.

Bath Portland Cement Company—Charles M. Miller, vice-president, 530 Federal Street, Pittsburg, Pa.; B. F. Stradley, vice-president and secretary, Townsend Building, New York City; F. M. Hoover, sales agent, Real Estate Trust Building, Philadelphia; F. B. Franks, superintendent, Bath, Pa.

Buckhorn Portland Cement Company—Abram C. Mott, president, 2241 North American Street, Philadelphia; Robert A. Patton, receiver, Manheim, W. Va.

Castalia Portland Cement Company—George W. Hackett, president, Publication Building, Pittsburg, Pa.; Charles L. Johnson, sales manager and secretary, Sandusky, O.

Chicago Portland Cement Company—Norman D. Fraser, president, 108 La Salle Street, Chicago; D. D. Drummond, vice-president and superintendent, Oglesby, Ill.; J. U. C. McDaniel, sales manager, 108 La Salle Street, Chicago.

Coplay Cement Manufacturing Company, Pennsylvania Building, Philadelphia, Pa.—W. H. Harding, president.

Dexter Portland Cement Company, Nazareth, Pa.—Conrad Miller, president.

Edison Portland Cement Company—W. S. Mallory, vice-president, Stewartsville, N. J.; E. Meyer, sales manager, St. James Building, New York.

Samuel H. French & Co.—Samuel H. French, Fourth and Callowhill Streets, Philadelphia, Pa.; C. Weber Jones, manager, Fourth and Callowhill Streets, Philadelphia.

Glens Falls Portland Cement Company—George F. Bayle, president, Glens Falls, N. Y.; F. W. Douglas, sales manager, 156 Fifth Avenue, New York.

William G. Hantranft Cement Company, Real Estate Trust Building, Philadelphia—H. M. Fetters.

Helderberg Cement Company, 78 State Street, Albany, N. Y.—T. Henry Dumary, president.

Hudson Portland Cement Company—G. H. Lundy, sales manager, Hudson, N. Y.; William G. Hoover, sales agent, Park Row Building, New York.

Kosmos Portland Cement Company—Samuel Horner, Jr., president, Land Title Building, Philadelphia; C. M. Dugan, Jr., manager of manufacturing department, Kosmosdale, Ky.

Lawrence Cement Company—Ernest R. Ackerman, president, No. 1 Broadway, New York; L. V. Clark, Philadelphia representative, Harrison Building, Philadelphia, Pa.; O. J. Johnson, salesman, Harrison Building, Philadelphia.

Lehigh Portland Cement Company—Harry C. Trexler, president, Allentown, Pa.; E. M. Young, vice-president, Allentown, Pa.; George G. Sykes, secretary, Allentown, Pa.

Nazareth Cement Company—A. W. Paige, president, 160 Broadway, New York; Joseph A. Horner, treasurer and general manager, Nazareth, Pa.; P. H. Hampson, director, formerly treasurer and general manager, Nazareth, Pa.

Northampton Portland Cement Company—C. P. Jameson, secretary-treasurer, Stockertown, Pa.; H. A. Schaffer, chemist, Stockertown, Pa.

North American Portland Cement Company, 30 Broad Street, New York—John B. Wight, secretary.

Omega Portland Cement Company, Toledo, Ohio—Amos Kendall, sales manager.

Peninsular Portland Cement Company, Jackson, Mich.—John W. Shove, secretary.

Penn-Allen Portland Cement Company—Avon Barnes, president, Allentown, Pa.; W. E. Erdell, general manager, Allentown, Pa.; W. R. Yeager, treasurer, Allentown, Pa.; S. G. K. Stradley, sales manager, Allentown, Pa.

Pennsylvania Cement Company—William N. Beach, president, 26 Cortlandt Street, New York; R. E. Bonner, secretary-treasurer, 26 Cortlandt Street, New York; W. W. Bale, sales manager, 26 Cortlandt Street, New York.

Phoenix Cement Company—William Turner, president, Nazareth, Pa.; George W. Laub, treasurer, Nazareth, Pa.

Sandusky Portland Cement Company, Sandusky, O.—P. B. Beery, sales manager.

St. Louis Portland Cement Company—H. Struckmann, treasurer and manager of manufacturing department, St. Louis, Mo.; A. H. Craney, Jr., sales manager and president, St. Louis, Mo.

United Kansas Portland Cement Company—George E. Nicholson, president, Iola, Kan.; Leigh Hunt, director, Iola, Kan.; B. E. Allison, sales manager, Commerce Building, Kansas City, Mo.

Universal Portland Cement Company—Edward M. Hagar, president, Commercial Bank Building, Chicago, Ill.; B. F. Affleck, general sales agent, Commercial Bank Building, Chicago, Ill.; B. H. Rader, Eastern sales agent, Frick Building, Pittsburg, Pa.; C. W. Boynton, chief inspector, Commercial Bank Building, Chicago, Ill.

Virginia Portland Cement Company, 5 Nassau Street, New York—W. R. Warren, president.

Vulcanite Portland Cement Company—John B. Lober, president, Land Title Building, Philadelphia; Albert Moyer, manager sales department, Flatiron Building, New York City; W. R. Dunn, superintendent, Phillipsburg, N. J.; Edward F. Cobb, Land Title Building, Philadelphia; William D. Lober, secretary-treasurer, Land Title Building, Philadelphia; T. G. Barr, Flatiron Building, New York; S. Warren Hartwell, chemist, Phillipsburg, N. J.

Western Portland Cement Company, 135 Grand Avenue, Milwaukee, Wis.—George S. Bartlett, vice-president and secretary.

Whitehall Portland Cement Company—Thomas M. Righter, president, Land Title Building, Philadelphia, Pa.; W. C. Kent, second vice-president and secretary, Land Title Building, Philadelphia.; Howard R. Green, sales manager, Land Title Building, Philadelphia; Harry Rauch, salesman, Land Title Building, Philadelphia.

Wolverine Portland Cement Co., Coldwater, Mich.—L. M. Wing, president.

Robert A. Potter, Philadelphia, has been appointed receiver for the Buckhorn Portland Cement Company, Manheim, W. Va. He gave bonds for $75,000.

The Puritan Cement Company, a subsidiary of the Ohio Cement Company, have broken ground for the erection of their plant at Hamden Junction, near Columbus, O.

May 1 is the date set for the starting of construction on both the Portland cement mill and the brick plant of the Lumbermen's Portland Cement Company, Iola, Kan.

Six Emerick air separators, manufactured by George Emerick, Nazareth, Pa., are included in the new equipment of the Colorado Portland Cement Company at Portland, Col.

The general offices of the Iola Portland Cement Company will be moved from St. Louis to Kansas City. They have engaged quarters in the Bank of Commerce Building.

Mill F, of the Lehigh Portland Cement Company at Ormrod, Pa., has reopened. Mill H, at Fogelsville, is also in operation. The other mills of the company remain idle.

The Virginis Portland Cement Company, near Craigsville, Va., is now working full time, and the work on the addition to double its capacity is rapidly approaching completion.

Cement, Tex., headquarters of the Iola Portland Cement Company, near Dallas, has now a population of 1,500 persons, and by a unanimous vote of the citizens the town will be incorporated.

J. C. Burch, secretary of the Iowa Portland Cement Company, Des Moines, Ia., states that the construction is now progressing and that it is hoped that this plant will be completed and in operation by the latter part of 1908.

The Bonner Portland Cement Company, Kansas City, Mo., will be shipping cement from their mill this month. Earl S. S. Smith, for many years with the Halliwell Cement Company of Kansas City, and previous to that time with the Frisco System, has been appointed sales and traffic manager.

The Nazareth Cement Company, Nazareth, Pa., have made several changes in the personnel of their mill management. Willis Lauder, former superintendent of the Buckhorn Cement Company, Manheim, W. Va., has succeeded A. F. Krable. Some minor changes were also made in the working force.

The Golden State Portland Cement Company declared its first regular dividend of 7 per cent on its guaranteed preferred stock at the regular meeting of the board of directors held March 10, payment to be made April 1, 1908, at the office of the company, 526 Citizens' National Bank Building, Los Angeles, Cal.

The Portland Cement Company of Tulsa, Okla., has been incorporated with a capital stock of $300,000. The directors are: Robert Galbraith, Mayor W. E. Thode, Hon. D. L. Leeper of Tulsa, and J. B. Sater of Stillwater, C. C. Mayer, George W. Adams, F. Chelsey, J. O. Mitchell, J. G. Ganneway, and A. H. Mayer of Tulsa.

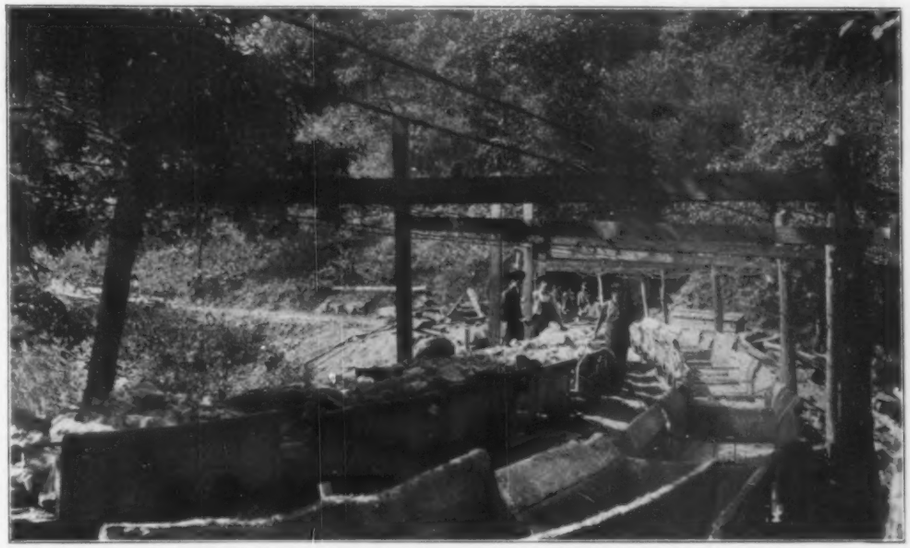
A. Baumberger, general sales manager of the Kansas City Portland Cement Company, reports that business is good. They are shipping a large amount of cement to California. Among the jobs they have there is the cement for the concrete work on the Federal Building at Los Angeles. They are also shipping cement to Mexico.

The Edison Portland Cement Company, New Village, N. J., have their entire complement working. Most of the foreign laborers at this plant quit work upon being advised of a reduction in wages, but this trouble is generally settling itself. The company has recently opened a new quarry on the Raub farm, near Buttzville, on the Lackawanna Railroad.

H. S. Hayden, manager of the Empire Portland Cement Company, Warners, N. Y., takes an optimistic view of the cement situation, and states that his plant is now fully repaired and every department working to the full capacity. John Bowman, superintendent, has resigned and has been succeeded by Arthur Straite, formerly with the Castalia Portland Cement Company, Castalia, O.

The Alsen's American Portland Cement Works, Alsen, N. Y., have been awarded the contract for 1,100,000 barrels for the Ashokan dams on the Isthmus of Panama canal work, to be delivered at the rate of 50,000 barrels a month. This is the second contract to reach over the million-barrel mark, the first being that for the New York Subway, which was awarded the American Cement Company.

The stockholders of the Coplay Cement Company elected the following directors to serve for the ensuing year: Ralph Blum, Arthur K. Kuhn, Gabriel Blum, William H. Harding, Penrose Fleisher, Frank H. Bachman, Ferdinand Loeb, Abraham Israel, Frederick J. Geiger, Philadelphia; Charles M. Saeger and Charles H. Moyer, Allentown; Samuel Y. Heebner, Chestnut Hill, and Joseph L. Berg, New York.



QUARRY OF THE IRONTON PORTLAND CEMENT COMPANY, IRONTON, O.

The Alma cement plant at Wellston, O., has resumed operations and now has 400 men at work, under the supervision of James T. Phelan. The capacity has been increased from 1,000 barrels a day to 1,800 barrels, with a considerable reduction in the cost of manufacture. Mr. Phelan, who has been superintendent of several plants in the East, starts in this month in that capacity with the Alsen's American Cement Company, Alsen's, N. Y., and will be succeeded at the Alma plant by Frank Buckley of Catasauqua, late of the Coplay Cement Company.

A mark of the restoration of confidence in the general situation is the starting of the many Portland cement mills in the Lehigh Valley section. The plants of the Vulcanite, Nazareth, Edison, Alpha, Lehigh, American, Coplay, Bath and other mills, each of which had a portion of their entire output curtailed during the past six months, are all coming into bearing, with a consequent natural rejoicing of the many hundreds of laborers in that part of the country. From the far West there also comes news that the building activity is once more started. New buildings are being erected in San Francisco, San Jose and other bay cities of California, and with these two extremities of our great country consuming the normal quantity of cement and other building materials the effect will certainly be shown in general construction, notwithstanding that this is a presidential year.

Equipment of Limestone Mine.

The accompanying illustration depicts the method of conveying raw material which is mined rather than blasted at the plant of the Ironton Portland Cement Company at Ironton, O. Electricity is the entire motive power operating the tramway from the lime and shale banks, the daily output of which is 300 tons of limestone and 60 tons of shale. Severalr hundred acres of land, underlaid with a vein of the limestone for which this region is famous, is controlled by the company, and the shale is found in territory immediately adjacent.

The trio of capable men representing the working management of this progressing company are J. P. Paul, secretary; A. C. Steece, treasurer and general manager, and John A. Acker, superintendent. The well-known character of the cement produced and sold by these above mentioned gentlemen, together with its successful use on works of magnitude in this country, tells very much better than words how ably and well the Ironton Portland Cement Company is managed.

Where Criticism Failed.

Perhaps the best established branches of usefulness of concrete are to be found in the subterranean improvements, such as foundations for structures of every class. The earliest realization of the advantages of the plastic character of cement commodities was developed in the construction of dams and basins or cisterns for holding water. Concrete has been found by expert examination to be the only available material with which to construct a permanent sewer or disposal duct to carry off the refuse of steel mills and dyeworks, where the fumes of acid gases and destructive solutions of heavily loaded waste waters predominate. Still there are cases where the personal equation element of the builder or some other detractive cause has been noted. We have always held that there is a right and a wrong way of doing these things. There will be more of this anon.

Ten years ago the plant of the Akron Cement Works, Caledonia, N. Y., was valued at $75,000. Today it is being demolished by Lewis Berger, who recently purchased the entire plant for $3,800.

J. R. Paul, Secretary. A. C. Steece, Treasurer and General Manager. John A. Acker, Superintendent.

OFFICERS OF THE IRONTON PORTLAND CEMENT COMPANY, IRONTON, O.

CLAY

FROM OUR TRAVELER'S NOTEBOOK.

LOS ANGELES, CAL.

When a stranger visits the great plant of the California Clay Manufacturing Company, near Central Avenue and on the Santa Fe Railroad, he naturally wonders that demand for sewer pipe for drainage purposes should be so great in this section, but in talking with F. F. Merrill, the superintendent (who, by the way, is an Ohio man, but has lived at Los Angeles for about sixteen years), I learned that supplying this demand was the small end of their business, for as only an eight-inch pipe is used, it does not take long to turn out a large quantity of it. It is the great call for pipe for irrigation purposes that keeps them busy to the extent of their capacity. Some years ago they also manufactured firebrick, but they now make it only to supply their own needs, and though the quality is superior to any which they can purchase, still, except when they can spare time, they do not manufacture it, although considerable flue lining is turned out. In the manufacture of pipe for irrigation, provision must be made for the pressure of hydrants. In case of a main line five miles long, they furnished 22-inch pipe, which has for some years stood a pressure of twenty pounds to the inch. At Alsendra there is a line of twenty miles, part of which is 8-inch, where the pressure is fifty pounds to the inch. At another place there is thirty miles of 6-inch pipe. The total length of pipe in the same field reaches seventy-five miles.

The clay mines of the company are at Elsinore, and comprise several hundred acres. The works and yards comprise thirty-nine acres. They have eight kilns and use petroleum for fuel—in fact, were the first to adopt oil for fuel, and prefer the crude article for this purpose. The largest size pipe they make is thirty inches.

The main office of the company is at 235 South Los Angeles Street. Alexander Caskey is the general manager.

The largest clay products manufacturing concern in Southern California is the Douglass Clay Products Company, whose works are situated on the Santa Fe and Salt Lake Railroads, in the northern section of Los Angeles. Calling at the downtown office of the company, 604 South Main Street, I met Archibald Douglass, president and treasurer, who invited me to pay their works a visit. On reaching the factory at the noon hour, in the absence of a guide, I proceeded to make a tour of the premises. The word "tour" is used advisedly, since the factory buildings, kilns and storage yard comprise ten acres, and I certainly was surprised, since I had not expected to find a plant of such magnitude in Southern California.

R. W. McKinney, the superintendent, is an Ohio man. He inquired if I would like to take a drink of water from an olla. While the water was acceptable, since I had been walking for some time in the noonday sun (and that means summer heat), I wondered what an "olla" meant. I found that it was an earthen jar which is manufactured by the company, and for which there is a large sale, and as it is of Mexican origin, it is known by its Mexican name. An American would call it a water cooler, since that is what it is used for. It is certainly a success in that line, for the water was almost ice-cold. Another queer product was large jars, holding five gallons, which I learned were used by wine manufacturers for grape juice, and by preserving-factories for fruit.

Going to the office, I met Edwin Bird, the secretary. He informed me they were building another stack and adding two more kilns, which would bring the number they operated up to nine. He said the clay was brought by rail from Elsmere, and their salt came from Redondo, on the coast. Their largest size of sewer pipe is thirty-six inches.

The interesting feature of this plant is the use of oil as fuel, no coal being used either for steam or for the kilns. They have oil burners in kilns and under their boilers. When kilns are warmed sufficiently by the oil flame, steam is turned on and blows the oil into the fireboxes, making a blast flame. The oil gives quick combustion, far quicker than coal.

The company manufacture vitrified, salt-glazed sewer and water pipe, terra cotta chimney pipe and flue linings, stoneware and all clay products, firebrick and fireclay.

Tile Business is Heavy.

COLUMBUS, O., April 16.—There is one line of industry which is overcrowded with orders and is finding it impossible to supply the demand made upon it for its product. This is the manufacture of drainage tile for the use of farmers, and while there are hundreds of plants in Ohio making tile, none of them is able to keep up with its orders.

The farmers this spring have plenty of money and are using it to improve their farms and all over Central Ohio more tile drainage is being done than ever before. Several Columbus business men who own farms have been trying to get tile for some time and one of them was compelled to order it from a northern Ohio factory, although there are half a dozen tile plants within a few miles of his farm. Hundreds of acres of land which have been too wet to do much with except in the most favorable seasons, are now being drained and they will add thousands of bushels to the grain production of the State.

The Clay Industry in Texas.

BRYAN, TEX., April 20.—Mr. H. G. Crosson, representing Missouri clay manufacturers, has been here this week in conference with Mr. John C. Vick, of Bryan, with reference to the development of magnificent clay deposits near Bryan. Tests will be made with reference to the use of this clay for making drain tile and other clay products, which Mr. Crosson believes will be in great demand for draining river bottom and coast lands in Texas in a few years. Tests of a satisfactory nature have already been made with reference to the manufacture of brick. Mr. Crosson states that he finds the clay manufacturing business thriving in Texas, and he regards the natural advantages offered here as superior in character.

[Los Angeles Pressed Brick Company.

LOS ANGELES, CAL., April 17.—The great building era in Los Angeles has called into existence many strong companies engaged in providing building material. Foremost in this line is the Los Angeles Pressed Brick Company, manufacturers of the finest quality of pressed brick in all colors, handsome enameled and glazed brick, mantel tile, fireproofing, roofing tile, conduits, paving brick and firebrick. The company conducts two extensive plants in Southern California, one at Alhambra Avenue and Date Street, and the other at Santa Monica. The facilities for producing the popular products of the company are of the very best, and orders are promptly filled. The offices of the company are in suite 1006 Union Trust Building, at the corner of Fourth and Spring Streets, where samples of the products manufactured may be seen. The officers of the company are: Charles H. Frost, president; W. C. Patterson, vice-president; Howard Frost, vice-president; West Hughes, secretary. Owing to the popularity of the pressed brick made by the company the plants are kept running to their fullest capacity.

Contract Let at Lexington.

LEXINGTON, KY., April 19.—The Vitrified Brick Company, of Louisville, has been awarded a contract here for furnishing 50,000 bricks with privilege of 100,000 for repair of Lexington streets. The Louisville firm's bid was $19.50, and they secured the contract over a local firm.

Will Add Machinery.

BOULDER, COLO., April 19.—R. M. Brann, of Denver, was here today to look after the interests of the Adamantine Brick Company, of that city, which has purchased the plant, land and good will of the Shale Brick Company, of this place. This plant is in the southeastern part of town. The old company will go out of existence. The new company will add to the machinery and also construct new down-draft kilns, so that the annual capacity of the plant will be several million brick.

Will Commence Operations Soon.

NELSONVILLE, O., April 1.—The Hocking Valley Fire Clay Company, whose new brick and tile factory was recently built on the south side of the Hocking River, nearly opposite the Hocking Bailey Railway Station, will be ready to begin operations with a full force of employees within a short time. At the present time they are employing quite a number of men at the plant testing the machinery and getting everything in good shape and running order.

Will Make Pavers.

BIRMINGHAM, ALA., April 16.—The Gadsden Brick Company is in operation again after having been closed for a considerable time on account of damage done the plant by fire some months ago.

A high quality of brick is being turned out and the local trade can be more than supplied and a considerable quantity will be shipped from this place. With the new machinery which has been recently installed the plant is capable of turning out 50,000 brick per day, and this amount can be increased if found necessary to supply the demand.

Experiments are now being made with paving brick, and it is believed that the new clay which has been located will make an excellent quality of brick as soon as the proper proportions of materials are found and the burning experiments are completed. The brick will be pressed before they are burned and will be very hard and solid.

New Plants to Start Soon.

HAMPTON, IA., April 16.—Work is going on rapidly on the new brick and tile plant located at Sheffield. The furnaces are in, two of the eight kilns are nearly completed and one of the 100-foot smokestacks is erected. Fifty men will be constantly employed after the plant opens, which will probably be about June 15. On account of the fine grade of clay in that territory the success of the enterprise is practically assured. The plant will be capitalized at $50,000.

There is also to be a cement, brick and tile plant built near the Des Moines, Iowa Falls and Northern tracks at the same town. Stock has been subscribed in this to the amount of $20,000. Sheffield is only a small place of about 700 inhabitants.

Firebrick for Germany.

MASSILLON, O., April 17.—What is believed to be the first shipment of firebrick from this country to Europe was made a week ago, when the Massillon Stone and Firebrick Company shipped over the Pennsylvania Railroad a carload of its product to the Rheinahr Glasfabrick, of Sinzig, Germany.

Indiana Clay Products Company.

INDIANAPOLIS, IND., April 19.—Governor Hanly, of Indiana, and Col. Fred Gemmer, the Governor's private secretary, are stockholders in the Indiana Clay Products Company, for which articles of incorporation have been filed at the office of the Secretary of State. Colonel Gemmer is a director of the company. Other directors are Daniel Foley, an Indianapolis contractor; William E. Hayward, an Indianapolis capitalist; Amos B. Keeport, of the Keeport Lime and Coal Company, and J. V. Zartman, secretary of the Indiana Manufacturers and Shippers' Association. It is understood that Mr. Hayward will be the president of the company.

The Indiana Clay Products Company will manufacture brick and all other clay and earthen products. At the beginning the company will devote its time entirely to the manufacture of brick; later the manufacture of tiling will be taken up. The capital stock of the company is $50,000, and it is understood that no stockholder has more than $5,000 of the stock. The company's plant will be erected at Jasonville, where there is a large supply of clay suitable for the manufacture of brick. Work on the factory will be begun within the next few days. The chief office in Indiana will be on the eighth floor of the new Odd Fellows' Building at Washington and Pennsylvania Streets. Other stockholders aside from those already named are August Kuhn, J. E. McCullough, Asa M. New, C. H. Jones and F. E. Dauner, all of Indianapolis; John Pynchon, of Chicago, and William P. Herron, of Crawfordsville.

Brick Works Expand.

BESSEMER, ALA., April 17.—The Bessemer Fire Brick Company is building two new brick kilns at the plant here, the new kilns being of the beehive kind. The addition is to furnish increased output for the plant, which for years has enjoyed a most successful business in Bessemer. At present the demand for firebrick is quiet, but there will be many orders booked within the next few weeks for buildings in contemplation.

The Mead & King Brick Company is the style of the new concern organized at Portsmouth, with a capitalization of $16,000. Isaac F. Mead, Clyde E. King, Sarah J. King, Henry E. Mead and D. B. Mead are the incorporators.

The Bloomingdale Clay Company, Bloomingdale, Ind., has been incorporated for $50,000. The directors are Arthur H. Zimmerman, John A. Dailey, Morton C. Hiddan, Otto C. Hornung and August A. Tillier.

The Crawfordsville Shale Brick Company, of Crawfordsville, Ind., has been organized with a capital stock of $25,000. The directors are John T. Ferguson, George B. Luckett, Joseph C. Herron, W. T. Whittington, Charles B. Ferguson, John A. Gilbert and James E. Evans.

SAND-LIME BRICK

Taste in the Selection of Brick.

BUFFALO, N. Y., April 5.—The Buffalo Sandstone Brick Company, at Lancaster, are making a silica brick of specially high structural value at no advance in cost over common clay brick, which is noted for its unsightliness more than anything else after the building has stood for a few years. The silica brick referred to is of a constant light color and imparts a character to the completed job which is different from stone, while it is far more pleasing than the dirty brown we are so accustomed to see in the larger cities. The Salem Reformed Lutheran Church, on Sherman Street, near Sycamore, is a fine example in this city of the difference in the matter of selecting materials. More than 500,000 of the silica brick were used in this building. Taste in the selection of building materials has been lacking in this community, but recently there has been an awakening in this regard.

The Sand-Lime Brick Industry in Germany.

John L. Jackson, who has been sojourning among the sand-lime brick manufacturers of Germany, sends the following interesting letter from Hamburg:

Dear Secretary: I have just returned from an extended trip to the brick plants at Kiel and in this vicinity. I have spent considerable time investigating the sand-lime brick plants throughout Germany, and found that manufacturers have made many changes since I was here last. Most of these changes are in plants running two or more presses. They use a little more machinery and cut down on their labor account.

One of the largest plants that I visited on my last trip, that was equipped at that time to make sandstone brick with a few hands by the use of mechanical carriers, conveyors, lifts and such paraphernalia, have changed their plant over because they found that too much machinery is worse than not enough.

At Berlin there are more than twenty plants making brick from sand and lime, with an aggregate yearly capacity of about 300,000,000 brick.

The price is very low at the present time on account of the small amount of building, caused by the labor troubles of last year. The brick masons are on a strike at the present time. The manufacturers of Germany sell their brick in some places as low as $3.60 per thousand, while in other places they get $4.50 per thousand. The cost of labor in Germany is based upon the thousand brick completed, and is about one-half what it is in the United States. Common labor can be employed almost anywhere in Germany at 80 cents to $1 per day of ten hours. The lime and fuel costs in all plants that I visited are about the same as with us, with slight variations in different localities.

I have collected a large amount of literature in the German language bearing upon the manufacture of lime, the character of the limestone, the hydrating of lime, and many other interesting points, which I will translate into English as soon as I get home. I also have some copies of comparative tests made at the government testing laboratories on both sandstone and clay brick, and also tests of lime and cement mortars.

Critical Reflections on Sand-Lime Brick.

BY E. HORSTMANN, San Francisco.

(Member of the "Verein Deutscher Ingenieure.)

In an illustrated pamphlet of a Californian Association of Manufacturers of Burned Clay Products, published for the purpose of advertising, whose objectivity I will leave undecided, reference is made as follows to an illustration of the text: "* * * Effect of fire on sand-lime brick was the same as on any common lime mortar."

That means for everybody who understands the purpose of this pretension properly that sand-lime bricks are nothing else than hardened lime mortar, of the same kind as is being used for brick construction work.

The above mentioned assertion is made either against better knowledge or in absolute default of knowledge at all, a circumstance that may rest undecided just as well as the objectivity of the pamphlet, which is pointed against all kinds of rivaling building material not being of burned clay. In the interests of the sand-lime brick industry I desire to flatly contradict this erroneous assertion.

I am entitled to claim for my dissertations, following below, the more objectivity, as from every standpoint I am not "merely" a representative of the sand-lime brick industry, but also a representative of the entire ceramic industry, as well as of the cement and lime industry; my interests are consequently not partial, but general.

However, if assertions are made from the one side without any proof, which to deliver in this case is impossible, in default of it justice and fairness require the interests of the sand-lime brick industry to be protected just as well as the clay brick industry expects this for itself with a higher or lower degree of discretion.

Both sand-lime brick and lime mortar (used for brick construction work, etc.) consist of a mixture of sand and lime. Whilst the proportion of the mixture of common mortar, in using fat lime, is 1:5 up to 1:6, in the proportion of the weight, it is only 1:13 up to 1:16 for mortar used for the manufacture of sand-lime brick.

That the mode of treatment of sand-lime brick mortar up to the fully prepared brick is to be quite different to that of common mortar follows with necessity of the facts mentioned above.

Mortar for brick construction work, etc. (henceforward called "common mortar"), hardens in the open air and under the influence of it; the hardening of sand-lime brick is done under the influence of moisture, heat and pressure, that is to say: by steam.

The hardening of common mortar is effected by carbonic acid, contained in the open air, by which the carbonic acid is connected with the lime, which becomes stonehard. The lime added to the sand hardens by its transformation into lime carbonate and unites the sand grains into a strong bond, without changing the sand grain. To stretch the sand grains in such a net or texture of sufficient firmness it must have a certain strength, i. e., the surface of the sec-

SALEM REFORMED LUTHERAN CHURCH, BUFFALO, N. Y.

tion must be big enough to hold the texture together.

That conditions the great percentage of lime in proportion to the sand. As the sand does not change itself during the hardening, resp. is not submitted to chemical influences, its chemical qualities are less important, and therefore besides quartz sand other stuffs, for instance lime sands, slags, etc., may be used just as well.

Entirely different is the action of the lime during the hardening of sand-lime brick under the influence of steam (this character of hardening alone coming in question for the modern sand-lime brick industry).

In this the lime takes up no carbonic acid, but, forming a lime silicate, influences in a chemical way the silicic acid of the sand. Experience has taught that applying steam of 125 to 150 pounds' pressure the hardening is performed in about eight hours.

During the hardening by steam the sand grain changes. It forms on its surface a film of lime silicate, being grown together with it. The same is the case with sand grain lying adjoining, and the grains weld or grow together.

By atmospheric hardening, absorbing carbonic acid, there can merely be spoken of a liming or cementing together.

In a chemical process, as it is fulfilled by the hardening under steam, the qualities of sand and lime, naturally, play a very important roll. The pure quartz sand together with the purest lime furnishes the best brick.

In easily disclosing sand, for instance sand containing feldspar or shale, 6 to 7 per cent of lime are chemically bound during the steam hardening, thus under circumstances the entire lime contained by the sand-lime brick mortar. In hard, and very difficultly disclosing sand only 2 to 3 per cent are bound under circumstances in the same hardening period, and yet, the brick has mostly the same strength, established in the fact that the hard, and difficultly disclosing sand proves to have a greater strength in itself. If there would be no difficulty to press bricks from such a meager and lime-impoverished mixture, being able to stand the steam hardening, one would be able to manufacture good sand-lime bricks of pure quartz sand and 2 to 3 per cent of its weight of lime. However, a mixture of such a low percentage of lime has very little binding strength and plasticity, and consequently a special and thorough working up is to be applied.

As is well known, carbonic acid influences under certain circumstances lime silicate connections and forms carbonic acid connections with the released lime, such connections proving to have a lower strength than the lime silicate connections. That would have as a consequence the disturbance of the structure of the lime silicate, because the present addition of the lime would be too small, still to form in connection with carbonic acid a texture strong enough for the cementing of the sand particles.

However, in this direction is nothing to be apprehended as carbonic acid only influences the lime silicate in case it appears in great quantities. Minor quantities of carbonic acid, as they occur in the atmosphere, do not influence the lime silicate, but the carbonic acid of the atmosphere will engage itself with the free lime not being bound in the brick after the steam hardening. This process is merely furthering the quality of the brick as there happens a slight after-hardening.

From the foregoing may follow sufficiently the deeply incised difference between lime mortar, used for brick construction work, etc., and sand-lime brick. Direct consequences of the difference are the high physical qualities of sand-lime brick contrary to the common mortar hardened in and under the influence of the open air, on which to base reflections I intend to do later in special essays.

Being especially important, today I announce only one of these qualities: The crushing-strength. On good sand-lime brick the crushing-strength shows in the average not less than 4,000 pounds per square inch.

The pronunciation of this one fact may alone be sufficient to qualify the "judgment" on sand-lime brick referred to in the beginning of this article to be absurd.

It is an incontestable fact that the degree of the fire resistance of sand-lime bricks depends on their crushing-strength. Just the same fact is valid for burned clay bricks.

The clay brick adherents cannot withdraw themselves from the fact that there are bad, even very bad burned clay bricks, and such bad and very bad clay bricks are also among the products of plant owners being members of the association coming in question in this article. And bad clay bricks are not better than bad sand-lime bricks. On the contrary. Good sand-lime bricks, however, are in all qualities to be taken in account, just as good as good burned clay bricks. This fact may be proved by competent demonstrations, and it is impossible to destroy it by pretending the contrary in a frivolous or malevolent manner. *Auditur et altera pars.*

The manufacturers of sand-lime bricks cannot silence better the opponents of the other camp, and secure a good and good-paying market for their manufacture, than by using best raw material and the best class of proper machinery which is equal to the necessities of the so very important industry, and which is fitted for expedient treatment of the raw material. The possibilities for that are on hand in richest mass. *Videant consules.*

Robert W. Llye, the receiver of the New York Granite Brick Company, advertised that he would sell the property of the company, which is located in South Amboy, N. J., on April 19.

At West Palmyra, N. J., the Pensauken Art Stone and Brick Company; objects, to manufacture, sell and deal in sand-lime brick and sand brick; capital, $350,000. Incorporators: Samuel Howitz, T. Duncan Just, James Doran, W. A. Leopold, John E. Welsh.

W. E. Johnson, of the Connecticut Brick Company, 2 State Street, Hartford, Conn., says that as soon as his company get their plant established in smooth working order at Hartford they will have one or two other plants located at favorable points in the New England States, yet to be selected. He says they have already completed arrangements to go ahead with the incorporation of two other companies.

The property of the Mulholland Press Brick Company, located at the intersection of the Pennsylvania Railroad and Silver Street, Marion, O., was sold March 17 to Geo. Clark, of Nelsonville. Mr. Clark is organizing a company to manufacture a different kind of sand-lime brick than that which was made by the Mulholland Company. He plans to open up the plant at once and will employ a large force of men.

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Meets Semi-Annually

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EXECUTIVE COMMITTEE.

Gordon Willis, Chairman; Frank S. Wright, Chicago; John A. Kling, Cleveland; Charles Warner, Wilmington; J. C. Adams, Pittsburg; Richard Kind, Toledo; James G. Lincoln Boston.

Official Organ, ROCK PRODUCTS.

A Good Start.

The opening of the spring season has caused a sudden activity in all building material lines. Contracts of all characters which have been held up for one reason or another are now being let, and the cry is going up from all quarters for material. This sudden rush of business has caught many of the supply houses with short stocks, as the inacitvity of the past few months and the stringency have led some of the dealers into believing that business was not going to revive so quickly. As a consequence there has been a quickening of the business pulse, and the dealers are rousing from their lethargy. Of course this is not true all over the country, for in many instances the dull spell has been put to a good use and new wagons and new warehouses and other improvements have been made, which showed that the wise heads in the business were aware that the quietness was to be of only temporary duration and availed themselves of the opportunity to make preparations to take care of the business when it came.

With the opening of the building season the old confidence returns, and prices which have been allowed to become somewhat weak in some directions are now stronger and show a decided tendency to advance. As normal conditions return the dealer will smile again. The old clouds will be dissipated by the spring sunshine, and as the orders pile up on the books so will the dealers' spirits rise.

The season which has started so auspiciously bids fair to eclipse all former records. We can only see a good old revival of business conditions ahead, and it is all the more welcome on account of the past conditions.

It is to be noted that every one of the big markets has quite a few big jobs to proceed with. In some cases these are said to be holdovers, but nevertheless it is work that will take lots of materials. The smaller towns are pretty generally booming with a large number of small jobs, such as store buildings, barns and residences of greater or less importance. The number of great municipal undertakings in the way of sewers, streets, water supply and viaduct appropriations was never greater.

Paving-work has been commenced on High Street, Little Rock, Ark., by the Street Railway Company along its line of double track. The company will pave seven blocks. I. P. Shelby has been awarded the contract for paving the rest of the street. This work will commence as soon as the railway company has completed its end of the line. Vitrified brick will be used.

Dissolution of Partnership.

SOUTH BEND, IND., April 6.—The well known firm of Miller & Lontz have given notice of their dissolution of partnership, Joseph Miller retiring from business life, and the business will be continued under the name of Samuel C. Lontz & Sons. In forming the new partnership Mr. Lontz has taken his two sons, Daniel R. and Harley C. Lontz, into the firm, and as both of them are already well acquainted with the affairs of the company the continued success of it is assured. They have been associated with the firm for several years and are both well known in a social and business way.

A Progressive Material Man.

E. S. Walton, general manager of the Youngstown Ice Company, Youngstown, O., is recognized as one of the most progressive supply dealers in the country. He is a charter member of the National Association and was never known to miss a meeting, or to be behind the times in the class of goods he has to offer. He can call every man in the county by his first name, and there is never an order for cement or coal or any other material that he is not consulted about, for he is recognized as the man who knows. Just now he

E. S. WALTON, YOUNGSTOWN, O.

enjoys the distinction of being the first dealer to introduce concrete structural tile in his local market. Besides his supply business he is a member of the directory of the Concrete Stone and Sand Company, who manufacture the poured concrete tile recently invented in Youngstown and known as the "Pauly System." "Teddy" Walton was first to see the commercial advantages of concrete tile and cinched the agency. He says: "That factory has got to get on a hustle to keep up with the business we are making for them. The product is just the thing that has been wanted for a long time, and the only trouble I see now is that we won't be able to get all we can sell, the way its popularity is now growing."

He considers the new material the greatest improvement for the dealer's benefit that has been introduced in a long time, because there is practically no breakage loss to stand in connection with handling such goods. We are enabled to present his picture on this page by a process that he cannot explain, for his personal modesty—if such is a fault—is the worst that we know about him.

Conditions in Maine.

PORTLAND, ME., April 10.—Frank W. Cunningham, a prominent builder and contractor of this city, expressed his views of the building situation in general in this vicinity. He said: "Lumber is not much cheaper and brick are maintained at the same price, although there have been reductions in both lumber and other building materials in other places. But that was where they felt the financial depression more than we have in Portland. There will be some large jobs completed, but I do not know of any new ones that have been planned for the coming year. There has been a growing demand for new buildings each year, and if the coming season is allowed to pass without much being done it will all have to be made up later, and perhaps under less favorable conditions."

Nuf Sed.

The leading dealers everywhere are well acquainted with the fact that ROCK PRODUCTS has always been the staunch advocate of hydrated lime, as the best approved, most scientific and only improved way of handling that indispensable material. Like everything that is new, it has taken a little intelligent promotion on the part of the dealer to put the new material across. It is nothing to make a great noise about, it seems, but on the quiet the tip comes from contractors who have learned to use hydrated lime that "it is all right."

Ohio Builders' Supply Association.

The executive committee of the Ohio Builders' Supply Association met in Columbus April 14 to arrange for the midsummer meeting and outing. Those in attendance were: W. A. Fay, president; Frank Hunter, vice-president; Bert J. Graham, secretary; D. K. Thompson, Jr., Joe Thomson, J. W. Wise and George Gengnagle.

The committee made a few minor changes in the by-laws of the association and adopted plans for the solicitation of members. At this meeting fifteen concerns were voted upon and elected as members. It is hoped that by the midsummer meeting there will be as many more new members enrolled upon the books. The outing will be held probably the second week in August at the Victoria Hotel, Put-in-Bay. President Fay is enthusiastic over this meeting and is working hard not only for its success, but for the success of the association as well. Undoubtedly a large number will be out at this meeting, as the place selected is one of the best in the Central States, and the management of the hotel promises all a jolly good time.

New Incorporations.

The General Export and Commission Company, New York; capital, $100,000; to deal in building materials. Incorporators: F. Prahl, E. E. Adams, L. J. Marshall.

Construction Materials and Coal Company, Brooklyn; building material, building, etc.; capital, $10,000. Incorporators: John Seitz, Joseph A. Coen, Lester B. Clark.

John B. Harker & Co., dealers in building supplies; capital, $20,000. The incorporators are: John B. Harker, Geo. Havenstein and B. M. Parker.

Dooley-Papworth Coal Company, Syracuse; to deal in coal, coke, wood, lime, etc.; capital, $3,000. Incorporators: Charles H. Papworth and John P. Hennessey, Syracuse; Frank J. Dooley, Camillus, New York.

The fleet of the Kelley Island Lime and Stone Company, Cleveland, O., is being fitted out for the season and will start operations as soon as ready.

The Bethalto Building and Material Company, Alton, Ill., have taken up the manufacture of concrete building blocks and are confident they will have a good year.

The stables, yards and warehouses of the Wadsworth Stone and Cement Company, Pittsburg, Pa., were destroyed by fire on April 1. The loss to the company was about $30,000.

H. M. Schmoldt, with his many interests at Beardstown, Ill., has for thirty years been in the builders' supply business. At the present time he is occupying half a block and he is constructing a new shed and wareroom 106x115.

The Moline Stone and Cement Company, Marion, O., held an election recently of directors, who were instructed to reorganize the company. Those elected were: Henry Ackerman, L. V. Uncapher, J. W. Thaw, Thomas Spragg, S. P. Lipponcott and W. B. Everitt.

J. G. Johnson, treasurer and general manager of the J. G. Johnson Company, Manitowoc, Wis., builders' supply dealers, has retired from that concern. Mr. Johnson founded the company sixteen years ago and built up from a small concern to an important enterprise.

The Maryland Lime and Cement Company, Baltimore, Md., have added another yard to their list. It is located at Oak and Twenty-fourth Streets. At this and their other yards they will dispense Lehigh cement and any other building material wanted, and they can do it in large quantities.

Big Philadelphia Supply House.

PHILADELPHIA, PA., April 19.—The retail warehouse of the Knickerbocker Lime Company, one of the most extensive builders' supply distributors in Philadelphia, is located at Twenty-fourth and Callowhill Streets. The presiding genius of this institution is William B. Irvine, who is a little over middle age, well preserved, of a pleasant exterior, and with whom only a little conversation is needed to discover that he is the possessor of a most active brain. Both the establishment and the man require no introduction to the readers of ROCK PRODUCTS, for he has built up a very large business and now stands in the front rank of America's successful business men. Among his personal acquaintances he is regarded as a man of the highest integrity and capable of the staunchest friendships. A few years ago he was elected treasurer of the city of Philadelphia, from which office he retired with honor, his record in public life being without reproach.

The business of the Knickerbocker Lime Company was started in 1867 by Irvine & Carty, the latter having charge of the manufacturing end of the business. Mr. Carty died some years later, it is said from the effects of severe burns received at the kilns. Soon after the Knickerbocker Lime Company was incorporated with a capitalization of $300,000, and William B. Irvine became its president and controlling head, and Valentine C. Trout secretary and treasurer.

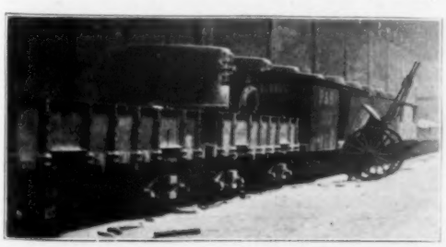
The business grew rapidly from the start. The first location was at Twenty-third Street and Pennsylvania Avenue. These quarters became inadequate, and in 1896 the company erected the present extensive warehouse. The building measures 230x400 feet, and besides this there is a commodious wharf fronting on the Schuylkill River, which is used principally for the unloading of sand. The sand operations amount to something like 50,000 yards annually, the sand being brought to the wharf by means of barges. Equipment is provided of a very complete character for elevating the sand and loading it into tramcars, which run upon an industrial railroad, the cars being propelled by electricity, to bring the material direct into the plaster-mixing plant or into the

WILLIAM B. IRVINE AT HIS DESK.

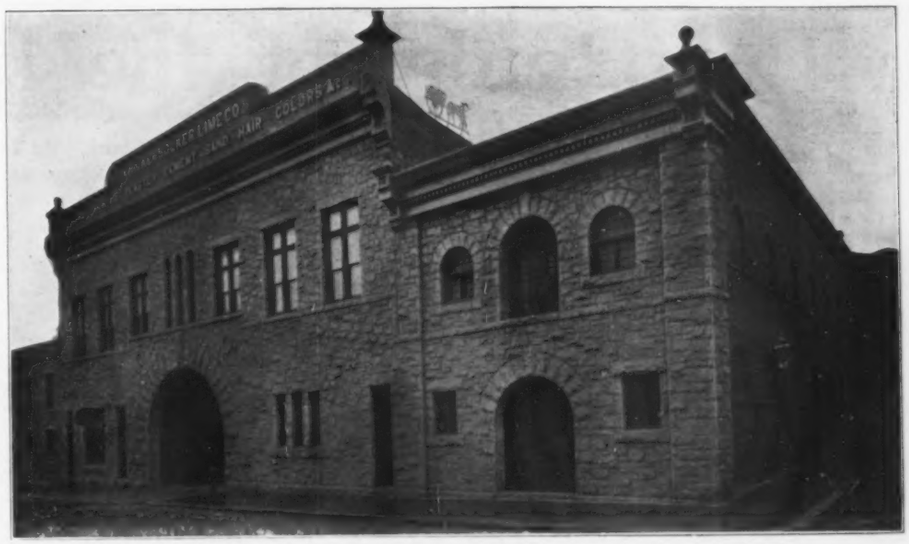
storage receptacles for distribution to the building trade. The electric equipment, both of the derrick and industrial railroad for handling sand, is complete in every detail.

One of the illustrations herewith shows the twelve iron bins for the storage of quicklime, each having a capacity of 7,200 bushels. These are made of boiler iron, riveted and finished after the manner of boiler construction, and each is provided with air-tight doors, so that when these storage bins are filled with quicklime they are perfectly air-sealed. It is perhaps the best arrangement for the purpose in existence.

Connected with the warehouse is a large plaster-mixing plant, which has been designed and perfectly



AIR-TIGHT IRON TANKS FOR THE STORAGE OF LIME—KNICKERBOCKER LIME COMPANY.



GREAT WAREHOUSE OF THE KNICKERBOCKER LIME COMPANY, PHILADELPHIA.

equipped for producing ready-mixed mortar, which is then supplied to the building trade. The process employed is unique and interesting. Lime is run to the fourth floor, where it is slaked and returned to the third floor by spouts into iron tanks, where it is permitted to settle and become stiff putty. After this it is sent to the second floor and there mixed by machinery with sand, and from the mechanical mixers the perfectly finished mortar is discharged into tanks on the first floor, where it is ready for delivery. On the first floor of the building they have a modern outfit of machinery for mixing hard wall plasters.

A warehouse capacity for 10,000 tons of cement has been provided, and the company handles annually 1,500,000 bushels of lime and no less than 40,000 barrels of Portland cement, besides imported Keene's cement, mortar colors, hair, plaster-of-paris, and a full line of builders' supplies on a large scale. They also manufacture concrete stone in all sizes and shapes required by the trade.

The counting-room and private offices of the company are located in the front portion of the great warehouse building, facing on Twenty-fourth Street, and are fitted up in tasteful although unpretentious style. Mr. Irvine is inclined to conservatism, and yet he is very enterprising, and the splendid business of the Knickerbocker Lime Company, both at the manufacturing and distributing ends, are due to his indefatigable efforts and continuous sound business judgment.

Roofers of Renown.

With offices in New York, Cleveland, Allegheny, Kansas City, St. Louis, Boston, Philadelphia, Minneapolis, New Orleans, Cincinnati, Chicago, and London, Eng., the Barrett Manufacturing Company has acquired a popularity among architects, builders and owners which substantially attests to the high character of its products. Having the requirements of the trade always well in mind, the Barrett company gives each section of the country particular study and local attention as to its needs and requirements, and as a result is constantly enlarging and perfecting its facilities. It has a reputation for goods of standard quality, and it is safe to say that products sold under the Barrett trademark will always be standard.

Barrett's saturated felts, roofing pitch, tar, creosote, coating, paints, varnish, gravel roofing, sheathings and rope roofings are all well known and are but a few of the equally well known Barrett products. Their Black Diamond roofing is a pioneer in the ready roofing line, having been on the market for over twenty years. During that time, while other compositions have constantly been tried and found wanting because they were based on ingredients which attracted only long enough for the manufacturer to get the money, the Black Diamond has steadily given satisfaction.

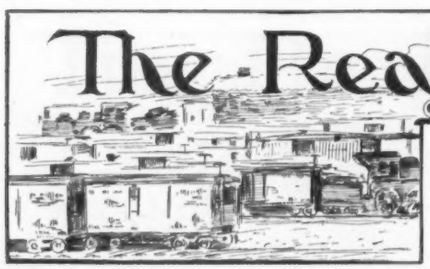
Barrett's Weatherproof Roofing is of more recent invention than the Black Diamond, but in its manufacture the experience of years was utilized and it therefore contains the best qualities of other ready roofings, besides having improvements that are exclusively its own. It consists of fibrous, all-wool felt, saturated with non-volatile compounds, making a plastic and pliable fabric, that is, as its name indicates, waterproof, vaporproof and airtight. The hottest weather will not cause it to run or ooze out as tar pitch preparations are likely to do, and it can therefore be applied to any shaped roof. Some time ago samples of it were subjected to a continuous heat of 120 degrees for ten months with the result that at the end of that time no loss was evident and the material remained both flexible and pliable. More than this, hot coals and live embers falling on such a roof will burn themselves out with no more than a slight charring of the actual space they cover.

There is a chapter on roofing economics that should be considered by every builder who keeps posted on the progress of the times. No matter of what materials your house is to be built with respect to the walls and interior finish, it avails nothing without a good roof, and this cannot be accomplished without good materials intelligently applied. The big Barrett concern will be delighted to give you the benefit of their extensive experience and expensive investigations for the asking; and, further, they will tell you how and where to obtain the best and cheapest goods to make your roofs satisfactory to the users.

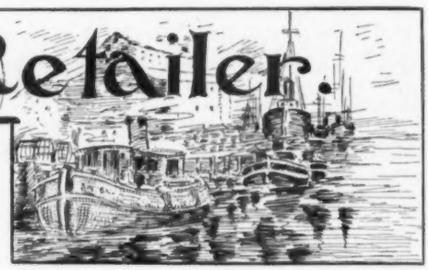
Urge Completion of Barge Canal.

The annual report of the Manufacturers' Association, of New York criticises the slowness of methods employed in constructing the State's 1,000-ton barge canal, and calls for a speedy completion of the waterway, which is needed more than any other improvement, because it will give the minimum freight rate upon a tremendous tonnage that otherwise would be impracticable to move.

EXAMPLE OF THE SAND-HANDLING EQUIPMENT OF THE KNICKERBOCKER LIME COMPANY.



The Realm of the Retailer.



A Few Leaves from "Scribo's" Notebook. He Visits Dealers in Many States Between Chicago and the Coast. Personal Interviews with Rock Products Readers in California, Missouri, Kansas and Illinois.

Even persons quite well informed concerning the really wonderful development of Southern California within the past twenty-five years will, on a visit to Los Angeles, experience much surprise while making a tour of this beautiful city. It is truly a new city, since very little remains of the Los Angeles of Spanish origin, nearly all of the old buildings having been removed in the march of progress.

A feature of the city lies in the fact that almost every State in the Union has contributed to her population, to her growth, with a goodly percentage of persons of foreign birth, together also of Mexicans and a good many Japanese. Another marked phase is the universal enthusiasm of its citizens concerning all the plans for improved municipal conditions. Large schemes have ready support, as, for instance, the plan for securing from Owen's River, in the mountain district, an almost unlimited supply of water to supplement the present facilities, for which enterprise the sum of $23,000,000 will, during a series of years, be expended by the city. The office buildings, banks and stores are all of a size and of splendor equaling those of cities much older and larger. The public buildings also rival those of Eastern cities. All the principal streets have been laid with asphalt and at night are brilliantly lighted by electric lights in clusters of globes on handsome iron posts. The absence of smoke, fog and dust contributes to the cleanliness of the city and preserves the buildings from the loss of their architectural beauty.

The street-car service is far superior to that of most American cities in respect of handsome cars, of which there is a supply so ample that they are run with great frequency, and at a speed which surprises the stranger. The total mileage of single track is 250, all electric.

The city has had the good fortune to have had but few labor troubles, and the strike as a means of securing higher wages and shorter hours is systematically discouraged by all the employers of labor.

Building operations are active and going forward on a large scale. The mild climate admits of the construction of all classes of buildings the year through. Manufacturing enterprises are growing apace. Old concerns are enlarging their plants, and new industries are constantly being developed. The attention of the leading citizens is being directed to the still farther enlargement of harbor facilities at San Pedro, both as regards safety and depth for the accommodation of large deepwater craft.

While there is considerable activity in real estate, transfers are normal, and none of the "boom" features, which in the past at times operated to the detriment of Los Angeles, are apparent. The assessed valuation of property in the city is over $200,000,000.

Conditions in the building supply line were found to differ considerably from those in other sections. Sewer pipe is mostly handled by the hardware dealers. Sand is procured locally; crushed granite from the near-by mountains. Cement plaster is popular with the plasterers, as they don't have to wait for it to slake. A large amount of the Portland cement used is from Germany, brought here by boat. One shipment recently consisted of 39,000 barrels.

San Francisco.

A busy man is J. A. O'Reilly, whose office is at 10 Third Street. Asking him during our conversation for his business card as a souvenir, I observed he styles himself "The Lime Man," though also handling cement, plaster, sand, lath, brick, gravel and rock. Mr. O'Reilly jocularly claimed to be a free lance, meaning that he handled anybody's and everybody's products, the only material for the sale of which he acted in the capacity of agent being the brick of the Bay City Brick Company.

The Western Lime and Cement Company, whose office it as 268 Market Street, are dealers in lime, plaster, cement, brick, sand, etc. In talking with the manager, O. M. Tupper, I learned they handle the Standard's brand of Portland cement and also the foreign article. In lime, they sell the Grand Canyon brand.

An account of the lime interests of San Francisco by all means requires mention of the Henry Cowell Lime and Cement Company, whose offices are at 15 East Street. During my interview with Mr. Cowell, I learned the business was established many years ago by his father. The senior Cowell believed in equipping his sons for the battle of life with a good education. Mr. Cowell says that the knowledge of chemistry obtained at the university at Berkeley has often been of practical advantage to him in the manufacture of lime, and now that his company will soon engage in the manufacture of Portland cement at their new plant at Cowell, Cal., he is likely to find still further use for his knowledge in that branch of practical science. The company have for years been large importers of foreign cement, and Mr. Cowell, while abroad, visited many Portland cement plants, both on the continent and in England. He has also visited the leading plants in this country and in consequence of all this investigation has familiarized himself with materials, the processes and machinery which must be employed to secure the best results. Mr. Cowell said that uniformity of quality was the thing to be aimed at, and one thing to be avoided was the failure to age cement sufficiently before putting it on the market. The company manufactures the well known brands of lime—Santa Cruz, Marble valley and San Juan. Mr. Cowall is a believer in hydraulic lime, and in the near future the company will make provisions for introducing this process.

Sacramento, Cal.

One may learn much of interest from a man who has had long experience in his business and who is caught with a little leisure. This happened to be the case with F. Cady, when I called at his office, Twentieth and R Streets. Among other matters, I learned that before engaging in the building-material business, he had been a contractor. Asking him, when I found he was agent for California Wood Fiber Plaster Company, what percentage of the plaster work was done in hard wall, he replied that it was not over two per cent and the reason he gave was that the plasterers fought it because it took a little more labor in spreading. He has issued a folder explaining why poor results were had by some users of hard wall plaster. He gives the following as the causes of failure:

1. Using fine or quick sand.
2. Putting it upon dry lath which absorbs the moisture, causing plaster to dry before it sets, which kills it.
3. Stretching the plaster so that there is but a very thin coat which barely covers the lath. When finishing coat is put on, moisture from same strikes lath, causing them to buckle and causing horizontal cracks to appear in plaster.
4. Not putting in windows and not closing outside doors to prevent dry winds from blowing upon walls until after plaster has set, thereby stopping all hardening action and killing plaster.
5. Using too much or not enough sand.
6. Mixing with it any other material than sand and water.
7. Not having two boxes. One should avoid mixing a new lot with the remainder of an old one.

For cement Mr. Cady sells the Standard brand of Portland. In lime he handles the Sonora Lime Company's and Holmes' Santa Cruz; also Best Bros." Keene's cement plaster. He has a large and well arranged warehouse, situated close to the Southern Pacific, and will also be on the line of the new Western Pacific Road, now being constructed. He has ample yard room on his property.

B. Kreuzberger, whose office and warehouse are on I Street, not being in when I called, I learned from his salesman, Mr. Clark, that they handle, besides the Red Cross (German) and Trowel (English) brands, the standard American brands of Portland cement, Holmes' Alabaster brand of lime, Blue Rapids (Kansas) hard wall plaster, Carnegie fire brick and Lincoln sewer pipe.

The Henry Cowell Lime and Cement Company, the well known San Francisco house, have a branch office and warehouse at 509 I Street, in charge of Mr. Baughman, who, I found, was from Quincy, Ill. Besides the various brands of lime manufactured by the company, they sell the Golden Gate brand of Portland cement and carry a full line of plasterers' supplies.

Pasadena, Cal.

At the corner of California and Raymond Streets, Missall & Co., of Los Angeles, have a branch warehouse and yard. Talking with Theo. L. Syvertson, manager, I learned that they handle Iola and Indian brands of Kansas Portland cement, Grand Canyon lump lime, Holdtite wall plaster, Angelus hard wall plaster, fire pulp and Majestic plaster, Washington lath, etc. They do a large amount of street work as general contractors, having a complete outfit for this class of work, in addition to their business as retailers of builders' materials.

Denver, Colo.

As the visitor to the mountain city passes from the imposing Union Station, the first thing that catches his eye is an arch which spans the roadway leading to the public streets, on which is inscribed in huge letters, the word "Welcome." At night, this arch and inscription are brilliantly illuminated, there being one thousand electric lights installed for this purpose. The effect on the stranger is pleasing, and the impression that Denver has rich treats in store in viewing it is emphasized when one notes the number of many-seated automobiles, with now and then a street-car, fitted up in fine style, bearing the legend, "Special," since such cars are chartered by private parties of sightseers. The clear blue sky and glimpses of snow-capped mountains, which almost surround this clean and beautiful city, together with the mild but bracing air, render existence so enjoyable that the temptation to renounce other gods and take up one's abode in Denver is found to be strongly pulling at the visitor's heartstrings.

I had been told that B. F. Threewit was popular, and the only thing I need to add is that either he tries to be so or else cannot help it. When he said he was familiarly addressed by some correspondents as "3-wit," it indicated that both these parties and himself were endowed with a sense of humor. At his warehouse, Fifteenth and Wynkoop Streets, Mr. Threewit carries in stock lime, cement, sewer pipe, cement plaster, wood and steel lath, etc. The following brands of Colorado cement plaster figure in his trade: Buckhorn, Ideal, Rocky Mountain and Bull Dog. He also sells American Plaster Company's Lawrence, Kansas, Acme cement plaster and Best's Keene's. At Walnut Grove, Mo., on the Frisco Railroad, about twenty miles from Springfield, Mr. Threewit has a quarry of several acres. As far as has been investigated, the limestone bed is 185 feet deep on the average. From it is manufactured a superior grade of white cool-working lime. The product of the kilns is mostly shipped to Colorado, both in wood and in bulk. Good color is aided by burning wood (black oak) in making this lime, and experienced men in Southwestern Missouri pronounce this limestone among the best in that section. In Larimer County, Colorado, Mr. Threewit owns a white sandstone quarry situated in what is known as the Fort Collins District. From this quarry, which is equipped with modern machinery, cut stone for building purposes is shipped. From twenty-five to thirty men are employed in the quarry and shop.

P. W. Terry, whose office and yards are situated at Twentieth and Blake Streets, deals in coal, wood, lime, hair, plaster and cement. Though not absolutely sure, I venture to affirm that Mr. Terry is a native of the Emerald Isle, and the ground for this is based on the ready wit with which Mr. Terry parried my interrogations. I also assume that P. stands for Patrick. Anyway, Terry is a busy man and seems to believe that as long as he has plenty

to do he has no special need to bother himself about what others are doing. There is, however, this fact to be taken into consideration, viz.; a dealer must know more than his customers. The wisdom of this remark lies in the application—to quote from Dickens. It will serve a good purpose to ponder on it.

Salt Lake City, Utah.

Among the leading concerns in the coal, lumber and building material line of the Zion City are the Burton Coal and Lumber Company. Dropping in at their uptown office, I met Walter J. Burton, treasurer and manager, and from him I learned that for Portland cement they handle Western States and Portland Cement Company of Utah brands, and in hard wall plaster they sell the Rudi (Col.) "Bull Dog" brand.

Independence, Mo.

When a man has been, as is the case of J. E. Lewis, for twenty-two years identified with the cut-stone trade and cement work, there is an opportunity to learn some particulars of interest, especially when such a man will take the trouble to go around town with a visitor and point out things he himself has noted and which furnish examples to "point a moral and adorn a tale."

To begin with, Mr. Lewis insisted that heat has more to do with rendering cement work in sidewalks defective than frost, through expansion and contraction. This can largely be guarded against by having an expansion joint, one-half inch, every twenty feet—preferably a steel joint. Cinders are a conductor of frost, and it is important to tamp them very uniformly. He also claimed that even cut-stone is affected by heat and cold and should never be laid tight to the joint. In case of sills (window or door) mortar should be laid only at the ends, then, if the wall settles any, the stone will not snap. Vitrified brick in street work will buckle if laid with cement filler, but asphalt filler will give and accommodate the expansion of the brick. As Mr. Lewis said, he had done four-fifths of the sidewalk work in town, all of which jobs bore his stamp, it was possible to go around and see the results of his experience.

Returning to his office with him I learned that he is the agent for the Western States Company's Portland cement. He also handles Ash Grove lime in barrels. He says that he loses about one-half of bulk lime in hot weather. In plaster he sells Independence Gypsum Company's Golden Seal cement plaster, and he says that, on the job, they use mostly hard finish and sift cement plaster for finish, especially in stores, but in houses they use white finish. He said lime should be slaked a week or ten days when used for wall finish.

Mr. Lewis also manufactures concrete blocks, and his own office is built of this material. He has a Walton machine, but prefers Miles, as in using this machine he gets a down face instead of a side face, and the down face is, in his opinion, preferable. The thing to overcome in the use of concrete blocks is expansion and contraction, which cracks the plastering. He thinks dark cement preferable as being less susceptible to the effects of excessive heat in hot weather.

Kankakee, Ill.

A great business in the production of concrete is being done by the McLaughlin-Mateer Company at their quarry at North Schuyler Avenue near the Big Four Railroad, a switch track from which serves for out-of-town delivery. Three Austin crushers, Nos. 4, 5 and 7½, are constantly running to full capacity. They have shipped in the past few weeks 36,000 yards to the Interurban Railway and are under contract to furnish 20,000 yards more as fast as it can be produced. The quarry averages 30 feet deep, and is over 300 feet long and 200 feet wide. From sixty to seventy men are employed. The company also deal in building materials and handle a large quantity of Portland cement from the Peninsular Portland Cement Company of Cement City, Mich., Peerless Portland Cement Company, Union City, Mich., and the Owl and Lehigh brands in cloth packages, though they would prefer to have paper and hope to see that package adopted by all the companies they deal with, the cloth bags being a great annoyance. They sell Grand Rapids, Hercules, Fort Dodge and Plymouth cement plaster, and find very little demand for lime mortar. Dee's, Evens & Howard's, Webster Bros.' (Shelbyville, Ill.), and McNutt's sewer pipe and Evens & Howard's firebrick are carried in stock. I had the pleasure of meeting both McLaughlin and Mateer, and found them to be hearty and hustling men who know how to superintend the operations of the large plant which has been under their charge for the past five years.

In C. Ruehle, Kankakee, I was told, had an energetic, progressive dealer in building materials. In his absence I had a chat with his daughter, from whom I learned particulars of interest concerning the business. She also talked of a vacation trip which she had recently made to the South. She was especially pleased with New Orleans, which afforded so sharp a contrast to her accustomed northern environment. Mr. Ruehle carries in stock everything in the building material line. It is not to be expected that a young lady could offhand, and especially after a long leave of absence, give an inventory of the stock in the three large warehouses. She said, however, that there was a quantity of the Wolverine brand of Portland and a supply of Louisville common in store. As for lime, she said her father manufactured that and loyally assured me that no better was made—anyhow, it was white lime when water was mixed with it. Then there was the Agatite and Ivory (U. S. Gypsum) cement plaster, all kinds of sand, some, she said, called "torpedo," together with all kinds of sewer pipe, firebrick, etc. Seeing the likeness of a fine, pleasant-looking gentleman, I inquired whose it was. She informed me it was her father and explained that his absence in Chicago was owing to his being the commander of the Kankakee Lodge. Mr. Ruehle was born in Germany, and comes from an old historic family. He furnished the cement (Chicago A A) for the handsome concrete bridge spanning the Kankakee River, 600 feet long, 40 feet wide. His office, warehouse and yard are situated at 11 West Avenue, near the Illinois Central Railroad.

Kankakee includes among its industries a big quarry which furnishes both building-stone and crushed stone. It is operated by T. A. Kerr, and is situated in the western section of the city. The equipment includes two Gates crushers (Nos. 3 and 4) and an Ingersoll channeler and drills. Near the roadside, C. Ruehle's lime-kiln is situated, and in talking with Mr. Kerr, he stated that the analysis made of the lime rock by the Illinois University chemist shows it to be of superior quality and that it produces a slow-slaking white lime. From Mr. Kerr's quarry stone for the new building for the Y. M. C. A. is being furnished.

Champaign, Ill.

The firm of W. W. Walls & Co. has been established over twenty-one years. Their business is in lumber, coal and building materials; office and warehouse, 32 East University Avenue. Young Walls acted as spokesman in the absence of his father, and stated that they handled several brands of Portland cement (cloth), and some Louisville (paper), Marblehead white lime in wood and bulk, together with a moderate quantity of hydrated lime; Kallolite cement plaster from the Cardiff Gypsum Plaster Company, Fort Dodge, Ia.; Rock wall plaster from U. S. Gypsum Company, Sackett plaster board, Rubberoid roofing, etc.

The Alexander Lumber Company have at Champaign one of their forty-five yards. This branch is in charge of John B. Weeks, who informed me that, in addition to lumber, they carried quite a line of building materials, though at some of the yards of the company the business was wholly confined to lumber.

At Champaign and the neighboring university city, I was indebted for introductions to some of the dealers in building material to the kindness of John M. James, salesman for the Grand Rapids Plaster Company, who makes his headquarters at Evanston, Ill. As Mr. James was well acquainted with these gentlemen and evidently popular and, moreover, knew where they were located, he proved to be a valuable guide and spokesman for the ROCK PRODUCTS man.

Urbana Ill.

The dividing line between Champaign and Urbana is very hard for a stranger to determine, and one must be careful not to commit himself to anything of a complimentary character unless he knows which city it applies to and the residence of the listener. In talking with A. W. Snyder, with S. E. Huff & Co., dealers in lumber, building materials, coal, etc., 295 North Race Street, I learned the company had been established about 8 years. They handle Lehigh and Universal brands of Portland cement, both in paper and cloth packages, Marblehead white lime, with some trade for hydrated, which is gaining ground, and Acme cement plaster; also Albatross, Fort Dodge, Ia. There is very little demand with them for lime mortar work except for finish and brick. For the season of the year, trade is satisfactory. The house and yard are near the Big Four tracks. Mr. Huff and his brother are interested in five yards, and he has had thirty years' experience in this trade. The sections in the sheds are numbered, a great convenience in locating material and giving orders to the teams.

It is said that the wandering Willies have a custom, doubtless more honored in the breach than the observance, of placing a cabalistic sign upon the gate post of a person who has furnished refreshment. By the same token, I felt inclined to blaze the way for a subsequent ROCK PRODUCTS representative, by placing a mark near the door-knob of the office of Hunter, Rourke & Co., the big lumber dealers of the University City. When a fat man is good-natured, his good nature, in keeping with his physical dimensions, is of compelling force. Mr. Rourke tips the scales at 220 pounds. Moreover he was for eighteen years, in early life, traveling man in wholesale lumber, which not only brought him valuable experience in the business, but a fine knowledge of human nature as well.

Besides handling lumber and coal and running a planing mill, the firm deals in building materials. For cement, they sell the Lehigh brand, mostly in paper, Ohio and Western Company's lime (Horseshoe brand) in barrels, together with their hydrated, Plymouth cement plaster and West Coast Standard Ready Rock roofing.

While we were talking a load was weighed, and Mr. Smith remarked that it tipped the scales at 160 pounds less than when last tallied. This, he said, showed the necessity of reweighing, as sometimes a dog might jump on or the horses have been fed. Mr. Rourke is an admirer of good horseflesh, and his teams are as fine as can be found in the retail lumber trade.

As we passed along the section of the yard bordering on the street, Mr. Rourke remarked it was a mistake to pile slow-selling stuff or culls there, as the lumber gets weather-stained. So little change takes place in the piles and such infrequent deliveries are made that it gives the impression a concern is not doing much business.

The stand of Hunter, Rourke & Co. is an old one, having been operated for over thirty-five years. A view of the yards would lead a stranger to suppose the company was in the wholesale business, and an inspection of the electrically-lighted sheds, warehouses and coal bins with concrete floors and foundations, shows that all possible provision has been made for convenient, safe and rapid handling of materials. Ample railroad facilities are furnished by proximity to the Big Four.

Business in concrete blocks is gaining ground in this locality, though mainly in the line of foundations, window and door sills, etc. The Urbana Cement Company, of which John Gray is the proprietor, have a good-sized plant near the Big Four Railroad. Mr. Gray showed me his concrete block-making machines, one of which was the Somers, and the other the Link-Harte, both being pressure machines. The former is the invention of a resident of Urbana. Mr. Gray uses Lehigh and Universal cement and gets his gravel from Williamsport, Ind. He uses some hydrated lime, partly because it helps the color of the blocks, and permits working the blocks quite wet without much danger of breaking, the lime rendering the blocks slightly pliable. He thought also that it tended to make the blending of the material more complete. Mr. Gray said he had all he could do. The plant has been running for three years.

The office and lumber yard of Myron D. Smith are situated near two railroads. He handles Lehigh Portland and Black Banner hydraulic cement, the former mostly in paper and the latter in wood packages; Ste. Genevieve white lime in barrels; American Cement Plaster Company's Agatite, Blackmer & Post's sewer pipe, cement and asbestos roofing from Ambler, Pa. (Keasbey & Mattison Company, manufacturers), and Original Rubber roofing. Mr. Smith is interested in the manufacture of concrete blocks and has a Pettyjohn machine. For some time he has been making foundations and other concrete work, and in addition has built a house for himself—or, rather, his father, who in early life was a machinist, and who is "handy with tools," has not only superintended the erection of the son's home, but has also done a good deal of the work in order to occupy his time. The old gentleman is justly proud of his skill and I could, in going over the dwelling with him, honestly admire his workmanship. An indication of the scarcity of cement along back was shown by his having to use three or four kinds of cement in making the concrete blocks, with the result that each brand of cement produced blocks varying from the others in color. This necessitated giving them a cement wash when the different styles showed up in the dwelling. As I was promised a photo of the house when completed, it may be possible to show the readers of ROCK PRODUCTS what a retired lumber dealer can do when he sets out—provided he knows how. This is the only concrete building in the town and is designed to serve as an object lesson. Mr. Smith said it was amusing to hear reasonably intelligent people prophesy that the building will crumble to pieces.

St. Joseph, Mo.

D. C. Mannan & Co., 1002 South Sixth Street, not long since bought out Frank Newland's builders' material business. Mr. Mannan, I learned before I

met him, is well qualified to handle this line, as he has had long experience as a contractor. I found Mr. Mannan so busy that the information I obtained of him was secured piecemeal between answering telephone calls and giving directions to his drivers. The answers came like pistol shots, for Mr. Mannan thinks quickly and talks rapidly, a habit acquired doubtless in superintending men on jobs.

The firm handles three brands of Portland cement —Iola, Atlas and Indian—and Milwaukee, Louisville and Fort Scott common cement, as well as Mankato (Minn.), special brand for bricklaying. Mr. Mannan spoke highly of the quality of Phenix white lime, which he handles in bulk and in wood. He deals in Marblehead hydrated lime and Acme cement plaster, together with U. S. Gypsum. In sewer pipe Blackmer & Post and Laclede-Christy goods are handled, and there is a good demand for Versailles firebrick. The firm, Mr. Mannan told me, had recently secured some good-sized contracts for Portland cement—10,000 barrels for the new hotel, and 6,000 barrels for the new building being erected for Block Bros., both contracts being filled with Iola Portland Cement Company's product.

In 1865 S. W. Neimeyer engaged in the sale of cement, paints, etc., and became the pioneer in this line of trade in St. Jo. Two years ago the Neimeyer-Hesse Company was organized to succeed to the old Neimeyer business. The company's main office and store is situated at 216 South Fifth Street, where the principal stock is Devoe's paints. At their warehouse, 117 West Jule Street, which I afterwards visited and where I met G. A. Cameron, superintendent, they carry a full line of builders' materials. From John Hesse I learned that they handle Sunflower brand of Portland cement, for which they are exclusive agents, and Louisville and Milwaukee common; Ash Grove white lime, which they sell both in bulk and in wood; Ash Grove hydrated lime, Acme cement plaster, Dickey's sewer pipe and flue lining. Their packages are cloth for Portland and paper for common cement. Speaking of plaster jobs, Mr. Hesse said they had not sold any rock lime for such work in two years.

Preston & Newcombe, whose office and warehouse are at 314-316 South Third Street, are jobbers of stoneware, sewer pipe, drain tile, chimney flue, fire brick, etc. They are sales agents for the Western Stoneware Company's products (Monmouth, Ill.), and handle Evens & Howard's line of clay manufactures. They are also proprietors of the St. Joseph Pottery. The firm carry a large and full assortment and are able to promptly fill orders in any quantity.

There is a great difference in the way retailers manage their daily routine. Some seem hurried and flustered, others are calm and never make a false move or waste an ounce of energy. These latter have time to meet a caller and give him a reasonable portion of their attention. This largely is the result of system and having efficient help. Such men generally leave the details to their employees.

I was not surprised after meeting John W. Bruce to learn that he was a Councilman-at-large in the city government, and it is a pity that more such experienced, successful business men cannot be induced to serve their respective communities in the room of the cheap ward politicians who so largely figure in local politics.

The first thing that struck me as I walked around the yard at 31 South Sixth Street was that I was viewing the largest stock of sewer pipe and flue lining which I had seen since I left Chicago three months ago. (I am referring, of course, to dealers, not manufacturers.) The sizes of sewer pipe ran from 3 inches to 36 inches. Mr. Bruce told me he had had a much larger supply of pipe in the early part of the summer. Mr. Bruce handles the product of the Evens & Howard Company of St. Louis. In Portland cement, he prefers Western States and Atlas, while for common he handles Milwaukee, Louisville and Fort Scott. In white lime he carried Ozark, Ash Grove and Springfield. In addition he sells a bricklayers' Louisville cement which comes already mixed. Portland cement is sold in cloth and natural cement in paper. The adoption of paper for Portland cement in place of cloth, provided the sacks are of moderate weight, cannot come too quickly for Mr. Bruce.

I examined Mr. Bruce's lime-house and noted the cracks were battened with laths, and there was a three-foot air space underneath. The tracks of the Union Terminal Belt run through the yard. I learned that the business was established eight years ago. At present teams are so scarce it is hard to handle business promptly.

The big warehouse of the Brown Transfer Company, near the Union Railroad Station, has the distinction of not only being the first, but also of being the only true reinforced concrete building in St. Joseph, the outside brick being simply curtain walls. This recent addition to the warehouses of the company was erected by L. J. Mensch of Chicago. It is 138x130, four stories, including basement. E. J. Eckel & Son were the architects. The Kansas Portland Cement Company's Sunflower brand was used exclusively on the job.

Carthage, Mo.

J. F. Harrison has been established in the lumber and building materials line at Carthage for over twenty years. He handles the Kansas Portland Cement Company's Sunflower brand, Ash Grove Comfiber cement plaster (U. S. Gypsum Company), Selepany's Sarcoxie and Carthage white lime, Eldorado nite (Okla.) cement plaster, Sackett plaster board, Malthood roofing and Johns' paints, which last-named have been on the Carthage market for over thirty years.

The Calhoun & Putnam Lumber Company deal in the Iola Portland Cement Company's cement, Ash Grove white lime and Acme cement plaster.

B. F. Thomas, besides lumber, handles Western States Portland cement, Ash Grove white lime and Golden Seal cement plaster.

The Carthage Lumber Company sell Iola Portland Cement Company's brand, Ash Grove white lime and Acme cement plaster.

Joplin, Mo.

E. C. Abernethy, of the Abernethy Lumber Company, whose office and yard are at Seventh and Kentucky Streets, said that in Portland cement their brand was the Iola Company's. They also sold Ozark white lime in bulk. For plaster work, either in bricklaying or for interior wall finish, they found the Oklahoma Plaster Company's Selenite gave good satisfaction, and they also sold the United States Gypsum Company's products. They carry a full line of Mound City paints and window glass. Mr. Abernethy is greatly interested in concrete blocks as a building material, and believes it will steadily gain ground. The office of the company is a concrete block structure, erected by a local concern (Missouri Concrete Company). I learned also that the Christian Science Church is one of the large edifices here in the construction of which concrete blocks were used. Mr. Abernethy stated that an engineer had told him the blocks should be made under water, i. e., immersed in it while being manufactured. The use of any limestone material for improving the color of the facing, Mr. Abernethy thought a mistake, as it tended to make a soft and porous block.

Going through the yard, Mr. Abernethy explained his methods, which included an ample air-space under floors in the lumber-sheds, with strong flooring and foundation piers. He made it a point to have culls and odd lengths kept in sight instead of stowed away and forgotten, which prevented quicker sale.

Mr. Abernethy has been established at Joplin three years and came here from Texas, where he had considerable experience in the lumber business.

A new firm in the lumber and building material line at Joplin is the A. L. Davis Lumber Company, whose office and yard are at 317 East Seventh Street. From B. H. Lancaster I learned that they sell the Sunflower brand of Portland cement, Ozark white lime, Agatite cement plaster and Devoe's paints. Mr. Lancaster said he was interested in hydrated lime and promised to write for particulars concerning cost, etc. He seemed surprised that none of the manufacturers had sent him their circulars. When this meets the eye of the publicity department men, it is likely the company will receive a full assortment of literature.

Under the style of Joplin White Lime and Cement Company, at 1010 Joplin Street, near the tracks of the Missouri Pacific Railway, A. P. Hoyt has been carrying on business since 1902. In talking with his son, H. C. Hoyt, I learned they handle the Indian (Neodesha) and the Sunflower (Iola) Portland cement, Ash Grove white lime in bulk, for which they have a limehouse, Agatite and U. S. Gypsum plaster and Laclede-Christy firebrick. Young Hoyt said they had some trouble with hydraulic cement in paper sacks, as it took moisture and swelled. A short time ago a tier of sacks was by this process overthrown, the rear ends swelling more than the front, resulting in a lot of trouble. He complained that there was no protection in the price of cement from the manufacturers in this territory. They seemed to be making the same prices to consumers and to dealers.

Atchison, Kan.

When one tackles the head of a big lumber firm, it is wise to have a concise presentation of one's business at tongue's end. A little experience will convince the dullest traveling man of this fact. I have not only been there myself, but I have observed some fall-downs on the part of the unseasoned salesmen who help swell the profits of hotels and the earnings of the railroads. Now Mr. Hixon, of the Hixon Lumber Company, has a preference for short stories. Having had plenty of experience, he hardly looks for much additional knowledge from the average caller. Instead of trying to add to his knowledge, I told him a story and he showed his appreciation by telling me an equally good one. Between whiles I found that he handles lots of Portland cement, his trade being divided between four companies: Iola, Kansas, Western States and last, but not least, Atlas. He also sells Hannibal Imperial and Ash Grove white lime, Sackett plaster board, Agatite and Ætna cement plaster, U. S. Gypsum Company's plaster, Hannibal hydrated lime and Fort Scott hydraulic cement.

C. A. Wright has been engaged in the coal and building material business for fourteen years. He has at 600 Main Street ample facilities for handling heavy freight, and, being located on the tracks, avoids hauling-expense. He handles Iola, Kansas and Western States Portland cement, Sarcoxie white lime in wood, Agatite and Acme cement plaster and Dickey's sewer pipe. As a result of our talk on the advantages to the dealer, contractor and the man who foots the bill of hydrated lime, Mr. Wright made a memorandum to write for prices.

There seem to be a good many young fellows occupying responsible positions as partners in Western supply houses. In some cases you might imagine they were born in the office, they appear to be so familiar with the details of the business. The occasion of this observation right now lies in having met R. S. Fisk of the Schulz-Fisk Lumber Company at the office of that concern, 1116 Main Street. Mr. Fisk informed me that they dealt in two brands of Portland cement put up in cloth, Iola and Kansas, the Lily brand of white lime, manufactured by the Rogers White Lime Company of Rogers, Ark. (barrels only), Acme cement plaster and Dewey's sewer pipe. Mr. Fisk, like all young men, took an interest in my lecture on hydrated lime and plied me with questions on the subject.

When, in calling on the Brockett Lumber Company, I found B. L. Brockett busy, I fell into conversation with a young man who Mr. Brockett afterwards informed me was his son, though he might have palmed him off on me for a younger brother. Mr. Brockett handles Iola and Kansas Portland cement, Sarcoxie white lime in barrels, Agatite cement plaster, Sackett plaster board, and the Hammar line of prepared paints. Speaking of Sackett plaster board, he said a little local advertising on his part, helped no doubt by the liberal general advertising of the manufacturers, had resulted in his disposing of a carload within thirty days, a single sale being made of 1,500 square yards to the contractors for the new convent building. A while ago, having considerable slack lime on hand, he advertised it and not only closed out all he had at fairly good prices but turned over the farmers and others he couldn't supply to the other yards. Mr. Brockett is an advocate of hydrated lime and doing all in his power to build up a trade in the Ash Grove article. Wishing to learn the secret of Mr. Brockett, Sr.'s youthful appearance, he said he guessed it came from taking things coolly, not worrying, and leaving his business locked up in his office from Saturday night until Monday morning. Mr. Brockett's office and warehouse are at 1019 Main Street.

At the office of the Paola Lumber and Coal Company I met E. S. Boyd, who told me that his company handle Kansas Portland Cement Company's common and Sunflower brands of cement, Ash Grove lime and Texas cement plaster from Quanah, Texas. They confine their trade in lime to barreled stock. In using lime, stonemasons make mortar and plasterers make putty.

J. G. Wilson has recently established himself in the lumber and building materials business at Paola, and is interested in yards at Neosha Falls and Piqua in this State and at Mulhall, Okla. Besides lumber he handles Western States Portland Cement Company's cement, Marblehead white lime, Acme plaster and Dickey's sewer-pipe. He also sells Devoe's paints.

The Perfection Cement Block Company of Victoria, B. C., has applied for an order authorizing change in style to the Canadian Concrete Construction Company.

D. W. Radichel of Lake Crystal, Minn., is moving his cement drain tile and artificial building block factory from Garden City to Mankato, and will enlarge the business.

The New Jersey Lime Company, Sussex, N. J., have already fired two kilns at the Hamburg works and the entire plant will be placed in operation as soon as the quarry can be pumped out.

Bitulithic Paving in New Orleans.

NEW ORLEANS, April 2.—A vast amount of street paving is being done here, and the foundation of most of it is cement. The Southern Bitulithic Company, of Nashville, Tenn., has the contract for laying 150,000 yards of this pavement, or ten miles of paving. This company has laid twelve miles in Shreveport, four in Baton Rouge, and two in Donaldsonville. This pavement has been laid in all parts of the United States, and some in Canada, but this is the first in New Orleans. R. M. Hyams, the district manager, has this to say of bitulithic paving:

"It differs from asphalt in this respect: Asphalt has 87 per cent of sand and mineral dust, and bitulithic 92 per cent stone, which makes it more desirable than asphalt owing to the fact that it is absolutely waterproof and unaffected by a damp climate such as we have here. It is my opinion that it is better adapted to the city of New Orleans than any other cheap pavement. The propertyholders here have generally petitioned for this pavement after a most thorough investigation, and as they are more vitally interested than any one else, from the fact that they have to pay for it, it would seem that they too are of the opinion that bitulithic is better for the city than any that has been tried.

"New Orleans differs from a good many cities as regards paving in that the property-owner has the right to select the character of pavement with which the street is to be paved in front of his property, and when the petition is sent in to the City Council, setting forth the character of pavement the property-owner desires it is obligatory on the council to order the street paved with the material selected. The city of New Orleans shares the cost of paving with the propertyholder. In some instances it is one-fourth and all intersections, and again one-third and all intersections.

"Bitulithic pavement is laid on a concrete foundation of six inches. The stone is crushed into various sizes from ¾-inch down to fine powder. This stone is thoroughly dried and heated, then mixed in a pug mixer with just enough bitumen to thoroughly coat all particles of stone. This mixture leaves the plant at 250 degrees Fahrenheit, and is taken to the street in covered wagons so as to retain its heat as much as possible. It is there spread on the concrete foundation and rolled with a heavy steam roller until thoroughly compressed, forming a density practically equal to stone. After it has been thoroughly rolled there is spread over the surface a coating of hot bituminous cement, and then heated stone chips are spread over this surface and rolled into the pavement with a twelve-ton steam roller, thereby giving the pavement a gritty surface. This is one of the good features of bitulithic paving, in that, while it has the appearance of asphalt paving, yet a close inspection will reveal the fact that the surface is rough enough to furnish a sure footing for horses, as well as automobiles, because the latter will not slip or 'skid' on the bitulithic pavement.

"The life of bitulithic pavement con not at this time be definitely determined, because it was first laid only eight years ago. It is my opinion that under ordinary conditions it will last three or four times as long as asphalt paving. The paving we have been laying has a 6-inch concrete foundation overlaid with two inches of bitulithic."

The cement is mixed in 3:5:7 proportions of gravel, sand and cement. The contract with this company will cost the city of New Orleans $600,000, approximately.

The Concrete Construction and Contracting Company has a $160,000 contract for paving. The streets to be paved are Magazine, from Canal to Julia Street; Common, from Magazine to Front Street; Gravier, from Camp to Delta Street. The company will also put in the sub-drainage on the streets it paves, which consists of 30-inch terra cotta pipes laid from seven to eleven feet under ground. In fact, the company puts the streets in perfect order by putting in new curbing and relaying the flagging of the sidewalks. The curbing is to be granite from the Pine Mountain Company of Atlanta, whose quarries are at Lithonia, Ga. The paving is small granite blocks to be laid on a concrete foundation. These blocks come from Venable Bros. and the Georgia Granite Company, both of Atlanta. The concrete base is eight inches thick and is made of Universal cement, washed gravel, from Prophet's Island, and lake shore sand, from Lake Pontchartrain, in the proportions of 1:3:6. Concrete is used around the corners, too, and around all circles. Concrete is also used in the bottoms of manholes, catchbasins and cesspools. Where the sub-drainage pipes come in contact with the sanitary sewer pipes they concrete around them to reinforce the pipes.

It will take ten carloads of the granite curbing and 250,000 granite blocks for the paving and 3,000 barrels of cement, furnished by F. Codman Ford.

SAND AND GRAVEL

A Peculiar Legal Problem.

BROOKLYN, N. Y., April 12.—Is sand a building material? This is the question which Magistrate Steers has been called upon to decide, and upon which he has requested the opinion of the corporation counsel, which he expects to receive before Tuesday, when Castle Bros., contractors, will appear before him to learn his decision. The Castles are engaged in laying a cement floor in the chapel for the Dutch Reformed Church, Snyder and Flatbush Avenues, and they dumped the sand which they removed on the asphalt roadway.

Section 270 of the city ordinances says: "In no case shall building material be placed upon, or mortar, cement or other materials mixed upon the pavement of a street, paved with asphalt, asphalt block or wood, except a permit be issued by the borough President having jurisdiction, which permit shall contain a provision that said pavement be protected by first laying planks thereon."

The contractors claim that the sand they removed from the cellar is not a building material. The police claim that it is, and arrested some of the Castle workmen. Other builders in the city will be interested in the decision.

To Market Sand from Lake Erie.

ASHTABULA, O., April 9.—Application has been made for papers of incorporation for the Ashtabula Sand and Gravel Company of Ashtabula, with authorized capital of $10,000. The company has already been organized with Robert W. Dingee as president and J. M. Kennedy as secretary, and this harbor is to be the scene of operations. They have purchased the sandsucker steamer Wonder, which was put in ordinary at Sandusky last winter, and Capt. W. E. Mallory and Engineer James Whelpley, who are to handle the boat during the coming season, have gone to that port to fit out the boat and bring her here to begin operations.

The Wonder has a capacity for handling 400 tons of sand or gravel daily and dock privileges have been secured on the Lake Shore side, where the company will have immediate access to railroad facilities. It is their intention to handle their output in carload lots only.

As will be understood from the style of the boat, the company will obtain their supply of sand or gravel from the bottom of the lake and will transfer it directly from the boat to the car. It is expected to have the work under way very soon.

Clearing Out Gravel Pit.

TITUSVILLE, PA., April 9.—The Pennsylvania Railroad has a work train and a large crew of men here clearing out the company's gravel pit this side of Hydetown. The boulders and rocks that have accumulated from the gravel taken out of the excavation are being hauled to Boughton, where they are being used for the construction of foundations for railroad embankments, which, when covered with gravel, will greatly improve the road and roadbed. The local pit furnishes most of the ballast used on the company's lines in this section, and it has been in use since the 60s. As soon as the big stuff is taken out further excavating will be done and new gravel exposed.

New Arkansas Plant in Operation.

GUION, ARK., April 3.—Carloads of sand rock are being shipped from the new sand plant of the Arkansas Silica Company. The Guion deposit of sand rock is claimed to assay at 99.75 per cent pure silica.

M. S. Clabby, superintendent, has numerous letters in his office from a number of glass-blowing establishments at Alton, Ill., and Pittsburg, Pa., and other points throughout the country, expressing entire satisfaction with the quality of glass sand shipped them from the plant at Guion.

About $25,000 has been invested in the enterprise here, which is on the White River branch of the Iron Mountain Railroad. The sand deposit was discovered when that road was under construction, but at that time the properties and commercial value of the sand rock were unknown to those who discovered it.

Big Gravel Pits Reopened.

NILES, CAL., April 4.—The Shinn gravel pits have been leased to an Oakland firm. Shipments of stone are being made daily and new machinery is being installed by means of which larger quantities are to be taken out in the future. The pits, located in a broad shallow stretch along the creek, are filled with fresh gravel each flood time during the winter and are the largest natural sources of gravel in the county.

Haul Gravel on Barges.

MCMINNVILLE, ORE., March 22.—Arrangements have been made for hauling gravel on barges up the Yamhill River from the gravel bars on the Willamette for concrete and street work. A local contractor has made arrangements to use 500 yards at once for concrete walks. Probably 3,000 yards will be brought in to supply the demands during the summer. The firm bringing it in has leased the Fletcher steambont landing, which has storage capacity for that amount. Cunningham & Son are contracting to deliver the gravel.

New Incorporations.

At Milwaukee, Wis., the Wisconsin Gravel Company. Capital, $6,000. Incorporators: John Eggers, George J. Carroll and William J. Carroll.

At Bridgeton, N. J., the Bridgeton Sand Company. Capital, $100,000. Incorporators: William H. Ott, Frank H. Gibson and Edward F. Cook.

Eagle Creek Sand and Gravel Company, Indianapolis; capital, $25,000. Directors: Charles B. McFadden, Stanley M. Timberlake and Joseph C. Manning.

Nassau Sand and Gravel Company, New York; capital, $10,000. Directors: John Fleming, John W. Sullivan, William E. Cleary.

At Long Branch, N. J., the Monmouth Gravel Company. Capital, $25,000. The incorporators are Judge Wilbur A. Heisley, John S. Slocum and Henry S. Terhune. The company is to deal in gravel.

At Chicago, the Lake Sand Company. Capital, $50,000; to deal in sand and building materials, operating water crafts. Incorporators: Charles E. Kremer, Martin Hausler and William E. Hausler.

J. F. Dale Sand Company, Hamilton County, Tenn. Capital, $2,000. Incorporators: J. F. Dale, S. W. Thompson, John Nall, Sr., C. S. Thompson.

At Louisville, Ky., the Ohio Falls Sand and Gravel Company. Capital, $15,000. Incorporators: Anna Livering, Ben Humpich, Henry L. Kremer and Charles Kremer.

At Hughes, S. D., the Indiana Sand and Gravel Company of South Dakota. Capital, $100,000; to buy and sell sand and gravel. L. A. Hippoch, president; Indiana office at Attica; David H. Donovan, agent.

At New Orleans, La., the Livingston Sand and Gravel Company, Ltd., with a capital at $100,000. Ben R. Mayer, president; W. E. Colladay, secretary and treasurer.

At Buffalo, N. Y., the Perry Sand Company, from $10,000 to $50,000. President, Daniel J. Perry, Buffalo, N. Y.

The Chicago and Northwestern Railroad has opened its gravel pits at Galt, Ill.

Will Abraham has sold his gravel pit west of Genoa, Ill., to Ralph Patterson.

The Lake County Gravel Company, Libertyville, Ill., resumed operations April 1. An entirely new system of screening the gravel has been installed.

W. S. Doty, recently head bookkeeper of the Alamo Manufacturing Company at Hillsdale, Mich., has been appointed manager of the Ohio Sand Company at Conneaut, O.

Large quantities of gravel for track elevation work in Chicago are being secured along the line of the C.,'B. & Q. near Aurora. One more crew was put to work at Sugar Grove and Hazelhurst this month.

The Chicago Gravel Company are employing two steam shovels and twenty-five men at their pit at Hammond, Ind., and will increase their force about the first of May. They are now turning out about twenty-five carloads per day and expect to increase the output to 100 cars.

The Summitville Excavating Company, wholesalers and retailers of gravel at Muncie, Ind., have about 25,000 yards of gravel on the banks of the old Thurston pit and are moving their machinery to the Sutton farm near Fairmont. The land there tested about eight feet of gravel at a depth of three feet from the surface and covering an area of about six acres north and south of the C., I. & E. rail.

PUBLIC PROGRESS IN NEW ORLEANS.

Municipal Improvements Costing $20,000,000 Now in Progress in the Crescent City.

NEW ORLEANS, April 10.—Possibly no municipality of the present day has undertaken municipal improvement on such a gigantic scale as has New Orleans. It is putting in a water purification plant and an entirely new waterworks system and sewerage and drainage system. The cost of both when completed will reach far up into the millions. In round numbers it will be approximately $20,000,000.

What all this means to the citizens of New Orleans can scarcely be reckoned in dollars and cents. It means health and comfort and prosperity. The wonder has been all these years, aye, centuries, for the city is over 200 years old, that people have lived and prospered as they have with foul-odored open sewers and water from above-ground cisterns that team with mosquito larvæ and dust from the narrow streets. But with all this it has ranked so well with the great cities of the land in point of health that the skeptical have wondered if there really was anything in the germ theory of modern science. But the city was not as large by several hundred thousand people a half century ago and the sanitary needs were not so great.

From the earliest days of civilization the water supply of cities has been a problem. Ancient Rome had its aqueduct, the ruins of which are yet to be seen. The old cities of Mexico have their cement or concrete aqueducts that bring the pure water from the mountains to supply the people who live in the valley cities. New York has its Hudson River, Chicago its Lake Michigan, and New Orleans its Mississippi River. Old boatmen say that the waters of the Mississippi are the healthiest in the world, and the scientists bear them out in a great measure. The first settlers of New Orleans depended on the water they caught from the eaves of their houses where they were not near enough to carry water from the river. From the rainwater barrel the above-ground cistern was evolved. At that time an underground cistern or cellar was impossible, for the water even in a very dry time was only a few inches below the surface. As the city grew and water was needed as a fire protection, and factories needed it for steam purposes, a water company was organized and furnished the people who wished it with water from the river unfiltered. This the citizens overcame by getting filters and by having spring water shipped in from the clear waters of this State and Mississippi. Both these methods were expensive alike to the private citizen and to the manufacturer.

The history of the city's struggle for pure water is an interesting one but too long to be dealt with here. Like all new enterprises, there were opposing factions that had to be educated out of the old way, and the matter of finances also came up and had to be overcome before actual work could be begun. June 15, 1906, the Sewerage and Water Board advertised for bids for the building of two complete water purification plants, one for the main city with a capacity of 40,000,000 gallons and the other, of 4,000,000 capacity, in the ward across the river known as Algiers. These bids were opened September 5, 1906. The successful bidders were Black & Laird, and if all goes well the work will be completed this year. For over a year 400 men have been at work on the main plant, and the progress of the work has been almost magical.

The purification plant is located in the outskirts of the upper part of the city near the river. An area of twenty-six city squares has been allotted to it. The pumping station is practically completed. It is an attractive building designed after the Mission style of architecture, and would be an ornament in any part of the city. Arising from the rear of the building is a tall smokestack, beautiful in its symmetrical proportions. About the pumping station is a chaotic wilderness of concrete columns that looks like the excavations of some prehistoric city. Scattered among the columns are great iron pipes. Out of all this apparent disorder, meaningless to one not up on construction work, order is rapidly appearing, and in due time the plant will be completed and there will be nothing to denote today's chaotic array of earth and materials.

The pumping station cost $250,000 and the machinery and equipment $500,000. The foundation is made of concrete supported on 1,850 yellow pine piles from 35 to 50 feet in length. The excavation was from 9 to 16 feet and was done by the orange peel derrick diggers and Hayward bucket. The earth was loaded into skips drawn by a dinkey locomotive to the spoil bank, where it was unloaded by a stiffleg derrick. The dirt will be used for grading the park after the plant is completed. On top of the piling concrete was laid from 3 to 6½ feet thick, which was made of one part Alsen's cement, three parts of lake shore sand and six parts of gravel. The walls of the building are of hard burned brick laid in and plastered inside and out with cement motar. It has a red tile roof and red terra cotta base belt courses and arches above the doors and windows. The tile was furnished by the National Roofing Tile Company of Lima, O. The chimney is of radial blocks 200 feet high. It was built by the Alphons Custodius Chimney Construction Company of New York. The base, or rather the foundation for the base, was excavated 12 feet deep. In this excavation were driven 100 piles, and concrete placed on top of these to the surface. On this is a 14-foot octagon base, from which rises the chimney of radial blocks.

On the inside of the pumping station are such powerful machines that the visitor feels like standing with bared head before them. There are two traveling cranes, each of 20 tons capacity. They were installed for the purpose of unloading and erecting the machinery and will be left in case of repairs to lift out of the way the disabled machinery and to put in place the new. There are four triple expansion pumps that stand 50 feet high and weigh 650 tons each. The daily pumping capacity is 20,000,000 gallons each against a 218-foot head. The city now uses between 10,000,000 and 15,000,000 gallons of water daily; hence any one of the pumps will more than supply the city at present. The city could grow to three times its present size and yet have one pump to fall back upon in case there should be a breakdown of any one of the others. The boiler-room is directly back of the low lift pump room and is

GROINED ARCH ROOF OF THE CLEAR-WATER RESERVOIR AT NEW ORLEANS.

equipped with twelve 200-horsepower Heine boilers set in batteries of two. They are provided with Ress stokers and Foster superheaters.

Not far from the triple expansion pumps stand three 40,000,000 centrifugal pumps, which, though much smaller than the triple expansions, have double the capacity when pumping against a 20-foot head. They are directly connected to cross compound Corliss engines of 225 indicated horsepower.

There is also a battery of economizers manufactured by the B. F. Sturtevant Company. They are supported on steel columns. There are large coal bunkers and a coal and ash-handling conveying system furnished by the Jeffery Manufacturing Company of Columbus, O.

Entering the building on one side of the low left pump-room may be seen the pipe through which the water will flow from the river, three-quarters of a mile away. It is tunneled under the streets out into and under the water even at low tide. This pipe is 4 feet in diameter, and should the pumping machinery break down or become temporarily disabled this pipe is so arranged that water could flow through it into a concrete well that will contain 2,000,000 gallons.

While the work is well in hand, much inconvenience has been occasioned during the winter by excessive rains. Whenever the weather would permit, the plant has been thronged with visitors, both of the local people and strangers in the city who have read of the very unusual plant that the city is putting in to insure an abundance of pure water. An interesting feature of the plant during the winter has been the giant concrete conduit which will convey the water from the reservoirs to the filters. It is seven feet in diameter, inside measurement, and two very tall

CONSTRUCTION OF THE CLEAR-WATER RESERVOIR OF NEW ORLEANS.

men can walk in it side by side or three small men, and not touch the sides nor the top. The acoustic effects have been pleasing to the visitors. From the reservoir end the voices of the workmen employed in the filter station could be heard distinctly. A shout would echo and reverberate with a thunderous sound. When the connection is made with the reservoirs this conduit will be covered deep with earth.

The reservoirs in course of construction could with a little imagination be turned into ruins of cities long buried and lately unearthed by some archæologist. The concrete columns and the great blocks of masonry lend aid to the imagination in conjuring classic ruins.

Between the reservoirs and pumping station stand the filters from which the water will finally be discharged pure and ready for its journey to the homes and factories of the city. The clear water reservoir will have a capacity of 15,000,000 gallons, and the coagulating reservoir 30,000,000 gallons. This is where the water will be coagulated for straining through the filters.

An interesting feature of the construction while the men were working on the concrete reservoirs was an 850-foot cable along which ran trolleys bearing loads of timber and other material. Five tons in weight passed every few minutes, yet the men worked unheeding the possible danger should anything go wrong.

The plant will be operated by steam. Two generators with an individual capacity of 150 kilowatts will be installed to light the buildings and grounds and operate a rather unusual trolley system between the purification plant and the river, three-quarters of a mile away. This will be a private affair for the use only of those in charge of the plant.

The contract of Black & Laird calls for an expenditure of $1,842,000, but the extras will bring the amount up to $2,000,000. In the construction of the purification plant Black & Laird had to build a working plant that cost $150,000. The main items of expense in their plant are the two span cables, one 850 feet and the other 450 feet; two 75-foot pile drivers with a Vulcan No. 1 hammer; a 55-foot pile driver; six stiff-leg derricks; a locomotive crane; a switching locomotive; two dinkey locomotives; a machine-shop and a woodworkinig machine-shop; a central concrete mixing-plant, where the Smith mixers are used; thirty-four 50,000-capacity gravel cars and twenty-two steam engines and boilers. In addition to all this machinery the company has forty head of mules and twenty-five dump wagons and a private pumping plant to supply water for the engines and concrete mixers.

The suction or intake pipe that will convey the water from the river to the purification plant is a 48-inch cast-iron pipe 4,500 feet long. The intake is built of sheet piling made of three pieces of lumber aggregating 14 inches in thickness. They are from 70 to 80 feet long. The intake crib is 15 by 30 feet and the water is allowed to enter this crib through openings in the face of it. These openings are closed to a certain height by stop planks in order to get the surface water. This is done because there is less sediment in the water near the surface than deeper down. In addition to the intake there is a wharf being built for the unloading of coal and coagulating material, which will be delivered there to the Sewerage and Water Board in boats or barges.

The wharf and intake are not being built according to the original plan, owing to the contemplated change in the levee system. It was designed to have a telpherage system, but it was abandoned because of the plans of the Levee Board.

The 40,000,000-gallon centrifugal pumps will pick up the water from the pipe leading to the intake and deliver it to the grit reservoirs, and it flows from them by gravity through the head house to the lime mixing and coagulating reservoirs and then to the filters, and after percolating through the filters it then flows by gravity to the clear water well. It is there picked up by the high duty pumps and is delivered to the consumer or to the clear water reservoirs.

The contract was entered into September 28, 1906, to be completed in twenty-eight months from the date of notice. The work has progressed so favorably that the contractors expect to have the plant ready for service some time during August of this year.

The filters are put in by the Roberts Manufacturing Company of Philadelphia, which is represented here by E. C. Boyle. The filters are 177 feet long and 140 feet wide. Running across the bottom of the filters are brass perforated plates. On top of the plates is placed twelve inches of select gravel. On top of the gravel is a No. 12 brass wire screen, ten meshes to the inch, covering the entire area of each filter. On top of the screen is thirty-four inches of specially graded sand. To clean the filters the water coming in from the settling basin is shut off, and filtered water is forced up through the filters, which has a tendency to put every particle of the sand in suspension and thoroughly cleans the sand. The sediment that has settled on top of the bed flows off through troughs provided for it to the drainage canal. The operation of washing a filter occupies from five to eight minutes, and immediately afterward it is ready for service.

The greater part of the sediment is carried to the bottom of the settling basins by means of plain subsidence and the use of coagulants. What remains in the water is carried to the filters and deposited on top of the sand, forming a film which retains all the colored matter. The process of sedimentation and filtration removes 98 per cent of the bacteria of the water.

The head house is a building that will in appearance be very much like the pumping station both in style of architecture and construction. On one side of the head house are two grit reservoirs, and on the opposite side two lime-mixing basins. When the river is very muddy the water will be admitted first to the grit chambers, where plain subsidence will remove the heavier suspended matter, consisting of sand and silt. Each grit chamber has a baffle wall on its center line, which makes the water travel double the length of the tank. The total capacity of the grit chambers is equivalent to one hour's flow. Returning to the head house, the somewhat settled water will pass through submerged orifices into the lime-mixing reservoirs, each of which is divided into sixteen longitudinal passages by seven longitudinal baffle walls and one horizontal baffle midway between the top and the bottom of the reservoir. At the entrance of this reservoir lime will be added regularly to reduce the carbonate hardness and to assist in the coagulation. Soda, when necessary for the elimination of the sulphates, will also be applied as the water flows through this reservoir, although the latter will not be used save during low-water stages in the river when the sulphates run high.

The quantity of chemical solution added will be automatically regulated according to the varying volumes of water treated by the flow through the submerged orifices. The automatic controlling apparatus through the plant is one of its distinguishing characteristics.

Lime will be added, not as lime-water, but as the milk of lime, containing 5 per cent of lime by weight, which will be kept thoroughly stirred by motor-driven impeller wheels.

The coagulating department in the head house contains, besides a storage-room, three slaking-tanks 7 feet in diameter and 6 feet deep, and three milk-of-lime tanks 11′ 3″x11′ by 11′ deep. Sulphate of iron will be prepared as solution containing 5 per cent by weight, in three tanks 8′ 0″x10′ 6″ by 10′ deep. A similar set of tanks is provided for the application of soda. Compressed air will be used for agitating the sulphate of lime and soda. All the tanks of the head house are of concrete. Lead-lined iron pipes will be used for the sulphate of iron solutions, the connections being of copper or brass. Iron or vitrified pipes will be used for the lime and soda solutions.

The head house is 50x150 feet and two stories above the water level. It will contain in addition to the coagulating department a suite of laboratories and the operator's office.

The treatment of the water in the grit-coagulating reservoirs will be a continuous process, the water flowing through each compartment constantly. From the coagulating reservoirs the water will pass through the head house to the filters.

The valves that will be used in this work will cost a small fortune—$100,000—but, of course, like every part of the machinery and appliances, they are of the highest scientific type.

The entire work is so stupendous that it is difficult to comprehend it in its entirety, and one can but feel that it is the work of a master mind. It is not a copy, because it was designed before any similar plant in this country. But who planned it is the question. George G. Earl, general superintendent to the Sewerage and Water Board, and Engineer J. W. Armstrong, under whose care the work is being carried on, are very reticent as to the author of the plans, although of course enthusiastic as to their accomplishment.

The excavating for the foundations was no small part of the work. For the pumping station 27,000 cubic yards were excavated; for the head house, 10,000; for the filters, 20,000; for the coagulating reservoirs, 490,000, and for the clear water reservoirs, 162,000. There is in the entire work 55,000 cubic yards of concrete, 2,000,000 brick, 125,000 barrels of cement, 2,000 tons of steel bars, 2,500 tons of cast-iron pipe.

Before the contractors had their plant completed the mixing of the concrete was done in a portable Smith mixer run by steam. This method soon gave way to a central mixing plant. The gravel and sand were carried from the storage bins on a belt conveyor to the mixing tower, where they were carried by elevator buckets to the overhead bins at the top, and from them spouted into measuring-boxes. Below the measuring-boxes is a large funnel-shaped steel mixing-bin. The cement was taken from the cement warehouse by conveyors and dumped on the mixing-platform and turned into the mixing-hopper at the same time with the sand and gravel. The water was piped to the mixing-platform and two barrels arranged beside the mixing-hopper with the gauge glasses so that the water could be accurately measured for each batch. A boy was stationed who attended to nothing but supplying the water for the mixer. From the mixing hopper the ingredients were spouted into a yard Smith mixer, which was operated from the shafting used to drive the machinery in the machine-shop. Two small dummies pulled two small flat cars each, upon each of which was placed a yard bottom dropping bucket. A system of narrow-gauge track is laid around the grounds to the various structures, and from these tracks the concrete buckets were picked up by the cable ways spanning the reservoir system or by derricks and placed in the forms. The contractors also have a system of standard gauge tracks which connects directly with the Illinois Central tracks, and most of the material could be unloaded at the points directly from the cars where needed in the work.

In general the concrete used in the foundations of buildings and machinery was composed of one part cement, three of sand and six of gravel. Most of the sand was lake shore sand from the beds of the rivers that enter Lake Pontchartrain; there was also some from Chattawa and Prophet's Island. The gravel is washed gravel from Prophet's Island and Chatawa. Alsen cement was used throughout except for a limited period when unable to get it delivered, when Alpha and Vulcanite were used. The Alpha generally ran from 70 to 78 per cent finer than a 200 sieve of approximately 40,000 meshes to the square inch.

The specifications require a tensile strength for neat cement of 500 pounds per square inch and 175 pounds for seven-day sand briquettes. The American Society of Civil Engineers' standard methods were used in making all cement tests.

Most of the rods for reinforcement used were the plain square rods manufactured by the open-hearth process by the Carnegie Steel Company and had an ultimate tensile strength ranging from 56,000 to 64,000 pounds to the square inch and with an elastic limit ranging between 38,000 and 44,000 pounds to the square inch. While the bulk of the rods used were plain, a good many twisted rods were used for beam work and the reinforcement of the reservoir buttresses.

In the reservoir walls and for beams and floor systems and all structures required to stand water pressure the concrete was in these proportions: 1 cement, 2 sand and 4 gravel. For the piers and vaulting of the clear water reservoirs the proportions were 1:2½:5½. The same was also used for the groined arches.

In general the concrete was mixed fairly wet and deposited around the forms in even layers and worked carefully by long wooden rammers. In inaccessible sections where this method could not be used to advantage the outside of the forms were pounded upon with wooden mallets, which had the effect to drive the pebbles back from the surface of the forms, allowing the mortar to spread over the face smoothly and evenly.

The reservoir walls in the coagulating reservoirs are approximately 14 feet high, and those of the lime-mixing reservoirs 20 feet. They are 12 inches thick at the top and between 18 inches and 2 feet at the base, reinforced by buttresses 10 and 12 feet apart. The walls were formed in sections 30 and 36 feet in length at one time. The original design of the walls is somewhat modified in construction to facilitate the supporting of the forms. The first intention was to build the walls monolithic in sections of the above length, but as it was found necessary to support the walls on piles and during the process of construction the ground was very muddy the contractors were allowed to build the base first; but ample key ways were provided, and the buttresses were reinforced and offset in such a way as to prevent sliding due to the pressure of the water. A double buttress was provided at the end of each section, and the reinforcement always extended the full length of the 30 or 36-foot section, it being the intention to have all cracks due to temperature stresses come at the double buttresses. In order to prevent the water from leaking at these points an expansion plate the full height of the wall, made of ¼x10′ steel was imbedded one-half its width in each buttress. In general a plate like this was inserted in every wall intended to withstand water pressure at points where the different days' work was stopped. The length of the units as established has proven very satisfactory in practice, both as to construction of the forms and the pouring of the concrete. When the colder weather came it was noticed that small

cracks appeared in the center of the double buttresses at just the points where it was anticipated that they should come.

As the maximum pressure on the bottom of the grit reservoirs is about 1,200 pounds to the square foot and on the coagulating reservoirs 700 to 800 pounds per square foot, and as it is considered that the soil in New Orleans will safely sustain this load it was thought best to support the water directly on the soil, and the reservoirs were so designed, in case settling should take place, that none of the weight will be carried to the walls, which are supported on piles and have a double line of 6-inch sheet piling, one on each side of the wall, to act as a water cut-off and prevent the possibility of any seepage water finding its way outside the reservoirs.

Some difficulty was experienced in building some of the baffle walls in the coagulating reservoirs, which are only three inches thick, reinforced by expanded metal secured to angle irons; but by screening the gravel and all particles larger than three-fourths of an inch and taking particular pains in placing it fairly good results have been obtained.

The clear water reservoirs occupy the larger part of two city squares. The combined capacity is 15,000,000 gallons, which will ordinarily be filled by a 20,000,000-gallon centrifugal pump provided for that purpose and located in the pumping station. The water will be forced through a 48-inch cast-iron pipe until it reaches the reservoirs, where it will pass through a conduit in the bottom of one of the walls. The gate house which controls the flow of water through the reservoirs will be situated at a central point.

As a precaution against the possibility of a sudden demand for an additional supply of water, such as would be made in case of a large fire, a large balance relief valve is placed on the line leading to the clear water reservoir, and in case the level of the water in the suction well should fall below a certain fixed level it would be automatically opened and allow the contents of the clear water well to enter the suction well.

The clear water reservoir is the only one in the system which is to be covered. The construction of the walls is somewhat similar to those in the other reservoirs, except that they are designed with an arch top in such a way as to transmit the thrust of the groined arch vaulting of the roof to the base. The columns supporting the roof are 16 inches square and 14 feet high. They are spaced 12 feet from center to center. The elliptical groined arches have a rise of 2 feet 6 inches and are 6 inches thick at the crown. The walls are reinforced similar to the other reservoir, but the groined arches are entirely without reinforcement. That they are amply strong is proven by the fact that heavy four-mule teams hauling wagons loaded with earth were driven directly over the tops of the bare arches. The clear water reservoirs are to have an earth covering one foot thick at the crown and an embankment against the walls with a slope of 2½ to 1. The unique feature of this reservoir is the fact that the roof load is carried on piles, whereas the water load is carried directly on the soil. One pile is driven directly under the center of each column, and the roof is carried directly on these piles. The concrete floor is made in blocks 12 feet square centering around the pile. An annular space is left in the concrete around the pile, which was afterwards filled with clay so that in case the pressure on the bottom of the reservoirs should cause any settlement none of the load would be carried by the pile which supports the roof. After the bottom was in the columns were erected and the forms removed before the forms for the groined arches were put in place. Forms for about one-third of the groining for one reservoir were erected at one time and were handled by the cable way that spanned the reservoirs. The work of placing the forms by the cable is very rapid. No trouble was experienced in placing the concrete. Screeds made of T irons were used for giving proper shape to the top of the arches.

Along with the building of the purification plant the water mains are being laid for the piping of the water throughout the city. The main pipe will connect the two horns of the crescent, which gives an admirable means of laying the submains through all the principal streets of the city. Scores of men are kept busy on this work, while several hundred are working on the water purification plant. It is hoped to have 450 miles of pipe laid by the time the water is ready to be turned into them for general use.

Not even the people of New Orleans as a whole understand or comprehend the full meaning of this gigantic undertaking. While the local press have given meager accounts of the work now and then comparatively few have taken the time to make the journey to the site of the plant to see what is going on.

To the business men of New Orleans the new water system will be of especial importance. It will give them better insurance rates, and these have hitherto been quite a burden. It will give them economy in the operation of factories and business establishments. It is estimated that the water rate for this pure, wholesome, clear water will be about half what is now paid for the unfiltered, unclarified, raw water from the river. To all the people it will give improved sanitary conditions—pure, filtered water free from the dust of the street and the nesting-place of the dread mosquito. When the cisterns of the city are a thing of the past and the sewers are all underground the mosquito will be exterminated, and the mosquito, scientists declare, is the sole cause of the spread of tropical fevers that sometimes come into this port from the tropics or through some less carefully guarded port.

INTERESTING EXPERIMENTS.

Tests of Bonds Between Plain Bars and Concrete Made at Washington University, St. Louis.

ST. LOUIS, April 10.—The Reinforced-Concrete Construction Company, consulting engineers and contractors (Hugues Brussel, C. E., president; Marc Segmin, secretary and treasurer; Lionel L. Viterbo, C. E., vice-president), whose offices are in the Columbia Building, recently completed a series of tests to determine some values of the bond between plain bars and concrete, and the results, which are of interest and value to all interested in concrete construction, are summarized in the annexed table. The tests were made at the testing laboratory of the Washington University for the company, who were acting by request of the Board of Appeals of the City Building Department. They were performed under the direction of Prof. J. L. Van Ornum, M. A. S. C. E., of the civil engineering department of the university, and were witnessed by a number of engineers, architects and contractors.

By mutual understanding between the engineers of the Building Department, the engineers of the Reinforced-Concrete Construction Company and Prof. J. L. Van Ornum, it had been agreed that a series of five tests should be made on medium steel bars, and another series of five tests should be made on high-carbon steel bars. The bars used were round, and of the following diameters: ½", ⅝", ¾", 1", and 1¼". They were embedded in concrete prisms, the cross section of which was uniform for all tests and 12"x12". The lengths of embedment were twenty-five times the diameter of the bar tested for the medium steel, and forty times the diameter of the bar tested for the high-carbon (with one accidental exception). The concrete was 1:2:4 Red Ring cement, Mississippi River sand and gravel, moderately wet mix.

The bars were embedded in the concrete on August 30, 1907. The wooden forms were removed from the prisms after six weeks, and the bonding tests were made ninety days after the bars had been embedded in the concrete—viz.: November 29 and 30, 1907. These tests have set forth the following facts of interest:

1. On every one of the bars tested the first slip occurred shortly after the elastic limit of the steel had been reached, which tends to show, regardless of any figures, that the bond between a plain bar and the concrete in which it is embedded is fully developed until the elastic limit of the steel is reached; then the steel begins to stretch and the bond is slowly destroyed from one section to the other.

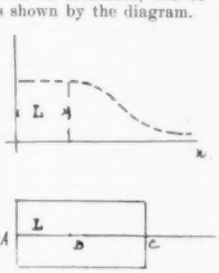
2. That after the bond proper had been destroyed there still remained a considerable friction.

3. That the maximum bond obtained per square inch of surface in contact was 460 pounds on medium steel, the minimum being 370 pounds; that the maximum bond obtained per square inch of surface in contact was 470 pounds for high-carbon steel, the minimum being 330 pounds.

That higher values per square inch of the ultimate bonding stresses would undoubtedly have been obtained had the lengths of embedment been shorter. In fact, the 1-inch bar of high-carbon steel had been accidentally embedded in the concrete only 32.7" instead of 40", and the bond per square inch went up to 470 pounds, a higher value than any other one of the same series.

This fact tends to prove that there is very likely, for a bar of a given diameter, a certain length of embedment corresponding to a maximum value of the bonding stress per square inch of surface in contact, and, taking that length of embedment for basis, that the bonding stress per unit surface decreases when the length of embedment increases.

In other words, if a bar of given diameter is given different embedments in a prison of concrete, if the embedments are plotted in abscissas x, and if for each embedment is determined the bonding stress y, and that these are plotted in ordinates, the resulting diagram would be as shown by the diagram.



These, of course, are purely theoretical assumptions, and it would be interesting to verify them by a series of experiments. Let L be the length of embedment corresponding to the maximum bonding stress per unit, then let us consider a prism of concrete in which is embeded a bar of diameter D, the fact that the bar begins to slip slightly after its elastic limit is reached leads to believe that the length L produces anchorage of the bar in the concrete, and that the bar begins to stretch at or around the section B: the bar stretching from B to C, naturally its diameter decreases, and therefore its bond between B and C is slowly destroyed; then the pull on the bar is sufficient to overcome the bond between the portion AB of the bar and the concrete, and consequently the bar begins to slip.

Another interesting feature set forth by these experiments is the fact that after the bond proper has been destroyed there still remains a considerable friction.

As the allowable tensile stress on a bar is taken at 40 per cent of its elastic limit, if we assume an allowable safe bonding stress of 80 pounds per square inch in contact, the fact that there still remained a friction of about 200 pounds per square inch shows that the bond proper of 80 pounds insures a safety of 40 per cent on the ultimate friction, should the bond have been prematurely destroyed.

	Physical properties of steel bars tested.								Bonding properties of steel bars tested 11/29-07.				Friction after slipping had occurred.	
Mark.	Size of tested Section	Maximum load producing rupture.	Maximum strength in lbs. per sq. in.	Limit of elasticity in lbs.	Limit of elasticity in lbs. per sq. in.	Elongation of tested section.	Percent of elongation.	Modulus of elasticity	Length of embedment in concrete.	Surface of embedment sq. in.	Maximum pull in lbs.	Max. pull in lbs. per sq. in. of embedded surface	Friction in lbs.	Friction in lbs. per sq. in.
Medium steel bars.	½"	12280	60300	8260	40500	2.13"	26⅝	29.900.000	13 8"	21 7	10050	460	7500	340
	⅝"	18510	57500	12640	39300	2 30"	28¾	29 300 000	16 7"	32.8	14010	430	10100	310
	¾"	24880	55600	17050	38600	2 32"	29	29 800 000	20 6"	48 5	18120	370	15980	330
	1"	55370	54900	29380	38400	1 91"	23⅞	28 600 000	25 7"	80 7	31110	390	30510	380
	1¼"	78350	60900	48140	38900	1 80"	22½	29 800 000	32 5"	126 8	49300	390	45000	350
High carbon steel bars.	½"	18710	88300	12280	57900	1 26"	15¾	29 200 000	20 8"	32 7	13120	400	6800	210
	⅝"	27580	85700	17440	54200	1 46"	18¼	28 900 000	25.6"	50.3	18360	370	12000	240
	¾"	48430	79600	26820	60700	1 10"	13¾	30 600 000	32 5"	76 6	29930	390	20600	270
	1"	76470	95800	42360	53100	1 56"	19½	29 700 000	32 7"	102.7	48260	470	29000	280
	1¼"	101330	83900	65940	54600	1 66"	20¾	30 400 000	30.5"	198 3	66140	330	39320	200

A First-Class Mill with an Unexcelled Product

THE KANSAS CITY PORTLAND CEMENT CO. KANSAS CITY U.S.A. KC CEMENT

The Kansas City Portland Cement Co.
R. A. Long Bldg.
Kansas City
Mo.

The Bonner Portland Cement Co.

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Manufacturers of
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PORTLAND CEMENT
IN THE WORLD
Operated under the
CAFFERY SYSTEM
Long Building, KANSAS CITY, U. S. A.

UNIVERSAL PORTLAND CEMENT COMPANY · CHICAGO · PITTSBURG · UNIVERSAL PORTLAND CEMENT

¶ This trade mark stands for the highest standard of excellence attainable in the manufacture of Portland cement. Continual tests, both in the laboratory and in practical construction work, extending over a period of eight years, emphasize the utmost perfection of Universal Portland Cement.

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PORTLAND CEMENT
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CEMENT BLOCK FACING
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United States Silica Co.
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The strongest and most perfect package for shipping and storing cement

Economical packing and smallest percentage of breakage
IT IS WATER PROOF!

The West Jersey Bag Co.
Front and Elm Streets CAMDEN, N. J.

Tell 'em you saw it in ROCK PRODUCTS.

PLAIN TALK

"Portland Cement" is a trade expression and refers to a dry powder having certain hydraulic qualities.

Good Portland Cement is an expression used by most all manufacturers of Portland Cement. Those not using it employ a stronger expression such as "the Best," etc.

A "User" of Portland Cement is the man who judges the relative merits of Portland Cement because his work must be good.

A "Satisfied User" of Portland Cement generally understands that the quality question comes first and the price question second.

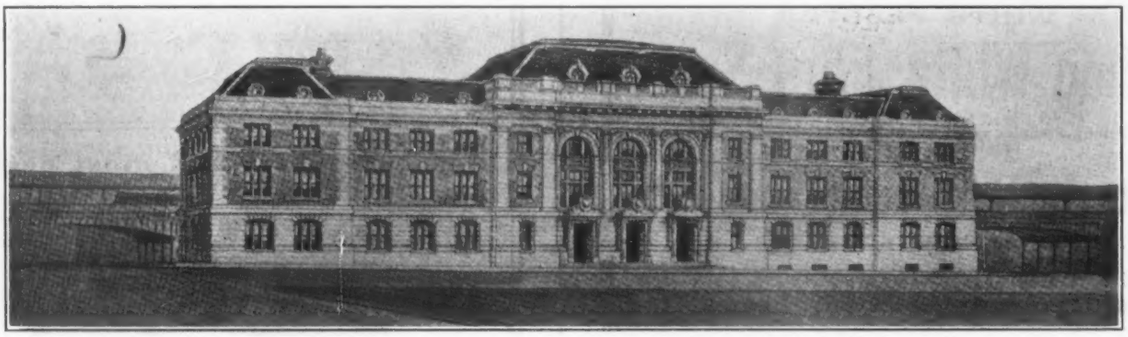
A "USER" OF PORTLAND CEMENT becomes a satisfied user of Portland Cement when he confines his attention to WHITEHALL.

He appreciates—uniformity of quality, light color, uniformity of color and great strength.

The Whitehall Portland Cement Co.

P. S.—We will gladly send CEMENTOLOGY, our monthly publication, to any one interested in Portland Cement.

1719-21 Land Title Bldg., Philadelphia, Pa.



Baltimore & Ohio Depot being built at Wheeling, W. Va.

This is one of the numerous buildings of importance plastered with **Wheeling Wall Plaster.** The architects who have once tested the merits of our plaster almost invariably specify its use wherever a fire-proof, sound-proof hard wall plaster is required.

Wheeling Wall Plaster is light, porous, elastic and easy to apply. It is practically indestructible, and is guaranteed unsurpassed for strength, durability and easy spreading qualities.

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WHEELING WALL PLASTER CO.

Exclusive Manufacturers. Wheeling, W. Va.

LUMP vs HYDRATED LIME

An interesting and instructive story worthy of serious consideration

Lump Lime

1. Will air-slake.
2. Generates heat on slaking and with High Calcium Limes **Burning** frequently occurs.
3. Contains considerable **Grit** and **Core.**
4. Is difficult to mix in exact proportions.
5. Requires time for complete slaking.
6. Is inclined to pit and crack on the wall, unless extreme care is exercised.
7. Cannot be slaked and then mixed with cement in cement mortars with uniform results.
8. Causes considerable loss.
9. Is dirty to handle.
10. Works uneven.
11. Is a constant source of trouble.

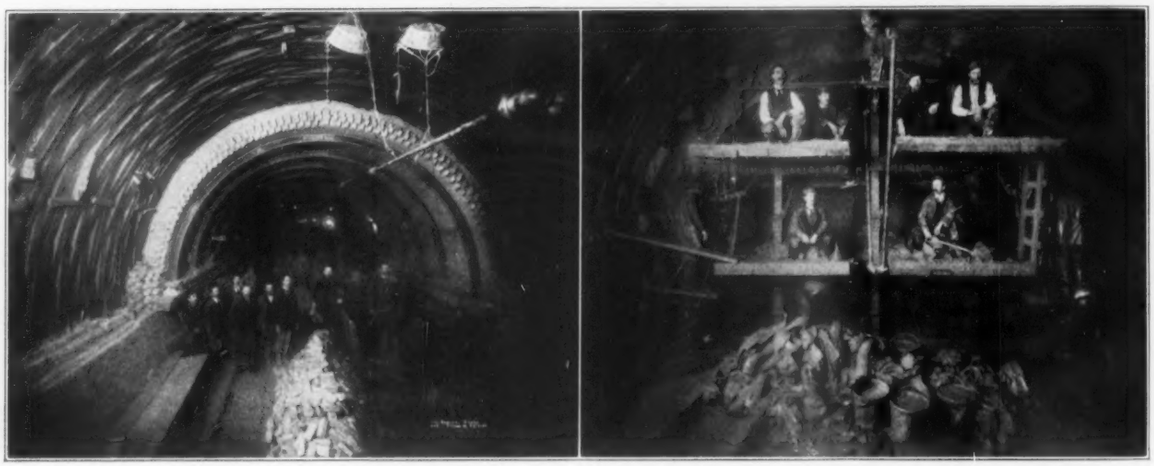
Hydrated Lime

1. Will **not** air-slake.
2. Requires no slaking; consequently a cool, plastic putty is assured, with no heat.
3. Contains no **Grit** or **Core.**
4. Is a dry powder and can be as accurately proportioned as cement.
5. **No Time** required for slaking; simply mix to a putty.
6. Will not pit or crack on the wall.
7. Can be mixed dry with cement, assuring absolutely uniform results.
8. Causes **absolutely no Loss.**
9. Is neatly sacked, consequently clean to handle.
10. Works perfectly **even.**
11. Is a labor saver and source of economy in every respect.

We are installing commercially successful hydrating plants.

THE KRITZER CO.
17th and Western Ave.
CHICAGO

The Test of Time
In Sewer Construction



THE LARGEST SEWER IN THE UNITED STATES UNDER CONSTRUCTION.

Chicago's Thirty-Ninth Street Intercepting Sewer. 12,000 feet long, 24 feet 10 inches external diameter, and 20 feet 10 inches internal diameter, the bottom being 20 feet below the level of Lake Michigan. Sixty thousand barrels of Utica Hydraulic Cement was used for the mortar and concrete. This greatest sewer job was completed many years ago and recent examinations demonstrate that it is now in perfect condition, and especially is this true in regard to the cement mortar and concrete.

Utica Hydraulic Cement is Especially Adapted for Sewer Work, Outclassing All Competition.

For sewer construction no artificially made cement can compare with Utica. The simple reason for this is that Utica Hydraulic Cement is a natural product, and is not affected by acid gases or water loaded with alkaline substances. In practically all the sewer work in the great cities of the world natural cement alone has been used. This is true especially of the city of Chicago, and throughout the Central West, where Utica Hydraulic Cement has always been given the preference in the construction of sewers as well as all other underground engineering work without regard to cost. Utica cement has been used in sewer work for 70 years, and it has stood the test of time so well that there has not been a single criticism. This proves conclusively that for sewers, foundations, and all other underground work it has no equal. Where examinations have been possible, it has invariably been found that old concrete made with Utica Hydraulic Cement is harder, tougher and more solid than bed rock.

At every examination of the sewers built thirty to forty years ago in the city of Chicago, and elsewhere, in which Utica cement was used exclusively for brick mortar, they have been found to be intact and in perfect condition, showing that neither sewer gases nor any other action has effected Utica cement mortar in any way whatever.

For public officials and contracting engineers there is another argument almost as important as the question of quality and adaptability. That is THE COST. And here the strong point in its favor may be stated in these few words: **While it is better for underground work than any artificial cement, its cost is much lower.** Why then should a substitute be considered? Where the question of cost in public or private constructions is of importance we are prepared to furnish convincing figures. It is not always that the most expensive material is the best for all purposes.

UTICA HYDRAULIC CEMENT CO.
UTICA, ILLINOIS

Seventy years successful record—What do you KNOW about other cements?

Concrete

The Selection and Preparation of Materials.

The operators in concrete are beginning to realize that there is no factor in their business which is so important as the careful selection of good materials that goes into the work. It is clearly the duty of every engineer and architect who has the superintendence of any concrete operation to take careful note of the quality of the crushed rock or gravel, the sand and the cement from which the concrete mixture is produced. Every test of concrete has become so familiar to those who have made a study of the business that it would fail to be applicable if a careless selection of the materials in any big operation was permitted to obtain. Too much can not be said with regard to uniformity. It is likely that the cement will be all right and maintain its standard because it is manufactured generally under such conditions as would secure this result, for the mills are operated under the constant and rigid tests of a staff chemist who adjusts the mixing of the raw materials hourly, and a constant watch is preserved to maintain the standard of the brand in this way.

Where crushed rock is used, it may come from any of the various parts of a large quarry; it may come from a top ledge or from a lower stratum, and in most cases it is really a mixture of all these elements, each having different chemical properties or at least different physical formations and conditions.

The sand, which is a necessary part of every concrete mixture, used for the purposes of filling the larger interstices, is the most illusive element that enters into the composition. It very readily takes up moisture, and in that state is easily contaminated with oils or oily substances, resins from decaying vegetation as well as animal matter, which might counteract or interfere with the proper bonding of the whole mass. The amount of water which different sands will absorb varies to an enormous extent, and the amount of cement that is required to properly bond different samples of sand to the desired degree of density and hardness varies quite as much, so that if you have determined the amount of cement to be used with one sample of sand, this proportion is no criterion for any other when it is wet, for the obvious reason that the amount of contained water varies with every different sample of sand.

A great improvement would be secured to the industry and would certainly pay in the long run if every yard of sand that is used in concrete mixtures was thoroughly washed, screened and dried, if every yard of gravel, crushed stone or granite was treated in the same way, the various sizes of stone kept in different compartments and all provided with adequate shelter, so that at the time of making the mixture a distinct starting point would always be easily obtained, since all of the materials would be properly prepared, separated and sheltered. In this way, and in this way alone, can continuous uniformity of the "mud" be obtained, which constitutes the actual basis of every undertaking in concrete.

This is not ultra-scientific. It is merely taking care of the results in advance the same as every careful mechanic should take care of his tools. That such a course will be demanded of the concrete contractor in the very near future goes without saying, for the utter carelessness, that in very many cases has obtained in this regard, has been the cause of nearly every blunder and of most of the failures that have been reported in recent years. Let us repeat that more attention should be required to the first selection as well as the preparation and preservation of the materials used to make the concrete mixture.

The Concrete Roadway.

"I would suggest paving one of our narrow streets with an all-concrete driveway as an experiment, as I have no doubt a street of this kind properly laid would prove a success and would be cheaper than brick." The above is part of the report of John McNeal, City Engineer and Commissioner of Highways, of the city of Easton, Pa. It is only another straw showing which way the wind is blowing. The time will come when the concrete roadway will be accepted as a fact and no longer as an experiment. Where they have been properly laid they have stood all the tests to which they have been subjected, and the most skeptical have been convinced that from the standpoint of economy, sanitation and durability they have no superior.

The concrete roadway is the only solution of the problem of good highways and roads. Crushed stone and gravel can be had in almost any community, and with cement selling at even a higher price than it is today there is no other roadway that can be compared with it. To go into a comparison of figures of the various methods of road construction would not be wise, because of the varying cost of materials in different localities. It is only a matter of comparison. They are considerably cheaper than wood, granite or brick, and more expensive than bitulithic or macadam as a general rule. However, the only way to arrive at a definite conclusion is to get prices from local contractors. Certain specifications must be adhered to, and such questions as the depth, whether 6 or 8 inches, or even deeper, and the amount and nature of the aggregate must all be given consideration. Crushed stone, the harder the better, makes the best aggregate, and it is generally conceded that the first layer should contain rock about the size of an egg and the upper layer should contain the screenings and dust.

Some consider the proper proportion as one part cement, two sand and five crushed rock or crusher run. It is generally accepted that the price will vary around $1.25 per square yard, according to location and depth. On roadways where the traffic is not heavy 6 inches is considered deep enough, but in cities where the roads are more generally used 8 inches would be better. In laying a street with concrete it should be divided in the center and one-half laid at a time. In this way traffic will not be stopped and time can be allowed for the cement to get its proper setting before any strain is put on it. This is an important feature and one that must be strictly observed in order to insure success. Expansion joints must be made at regular intervals as in sidewalk construction. After one-half of the street is completed the traffic is then diverted to the other side.

CONCRETE MAUSOLEUM.
Erected by Hollow Concrete Block Manufacturing Company, New Orleans, La.

Where highways are constructed with concrete care should be taken to protect the sides or edges in some manner. In street paving the gutters and curbing answer this purpose.

It is by far the cheapest of all streets to reconstruct or repair, as the old material is simply recrushed and used over again with the addition of new cement as a binder. It can be readily seen that this is a distinct saving and a considerable item in figuring initial cost. Concrete streets are sanitary and easy to clean. Treated the same as asphalt, they not only look as well but will last longer. They are not slippery and afford a foothold even in the worst weather.

Concrete roadways are no longer considered an experiment. Engineers and commissioners of public highways all over the country are investigating them, and the result, when the public is fully aware of the facts, as they must shortly become, will undoubtedly result in the solution of the problem of economical highway and street construction.

New Economy in Sewer Work.

Not the least among the advances in the concrete equipment line to be introduced at the great machinery exhibitions held at Chicago and Buffalo at the beginning of the year is the Hickson system of sewer and culvert construction, which demonstrates a very considerable economy in building heavy concrete sewer work in mass in place. The system employs sheet steel "formers" of cylindrical or horseshoe shape, provided with internal clamping members to impart rigidity to the "form," the outside surface of which shapes the opening of the finished sewer or culvert. All forms are in 6, 8, or 10-foot sections. For light work they are laid in the trench very much after the fashion of putting together the joints of a stove pipe, and concrete is rammed around the form, of such thickness or gauge as has been decided on, by the use of a movable pallet, which is the main feature of the system.

The engineer in charge of heavy sewer work gives the grade for the excavation and provides for the foundation of concrete grout so as to get a uniform solid bearing similar to good sidewalk work both as to the foundation and the top finish, for this makes the base or bottom of the sewer. Then, beginning at the lower or outlet end, the horseshoe-shaped form is braced in position, the two edges of sheet steel bearing upon the smooth concrete base. The base can be at very small expense made to curve downward to the center, providing channels on both sides for receiving the base of the continuous horseshoe arch of steel reinforcement, consisting of hoops or rods bent to the curve of the form that take care of the lateral stress, while rods connecting and attached to these at the calculated intervals by wiring provide for longitudinal reinforcement. All of this part of the work depends upon good practical engineering, but at this point the Hickson system introduces its principal economy by doing away with the lumber and cost of "centering." When it comes to laying the concrete to form the horseshoe arch (or, for that matter, any other shape of arch required), then an arch-forming pallet, the length of the "form" section already in place, is attached to either side in such a way that a concrete shell of any desired uniform thickness can be built around the form, imbedding the reinforcement and pouring and ramming the concrete material in place as fast as it comes from the mixer. With two pallets the work of laying the concrete can begin on both sides, and the permanent filling of the trench proceed with ramming into solid position as soon as the first pallet width or layer is completed with sufficient "set" to stand removal, which is always found in practice to be plenty fast enough for the most energetic labor that can be employed at ramming.

Fully half of the labor expense can be eliminated after the actual laying of concrete begins by using the Hickson system, not the least among the advantages being that there is always something for the men to be doing. While the mixer is grinding out a batch the men in the trench can be ramming dirt for the permanent outside filling, the force of which operation is a calculated part of the system to help sustain and keep in place the green concrete as the wall of the arch mixes. The compression of the material that must be rammed into solid position to make a good sewer job is used in a measure to displace the carpenters' and the lumber bill. The whole outfit sold by the Hickson Sewer Mold Company, Mt. Gilead, Ohio, is insignificant in first cost, but when applied with good engineering and capable contracting ability the system makes possible economies that roll up in big numbers. There are places and special circumstances, of course, where the Hickson system may not be applicable, but in very many cases it will turn the trick with a profit. Sewer and road contractors will do well to consider this innovation that is really worth while.

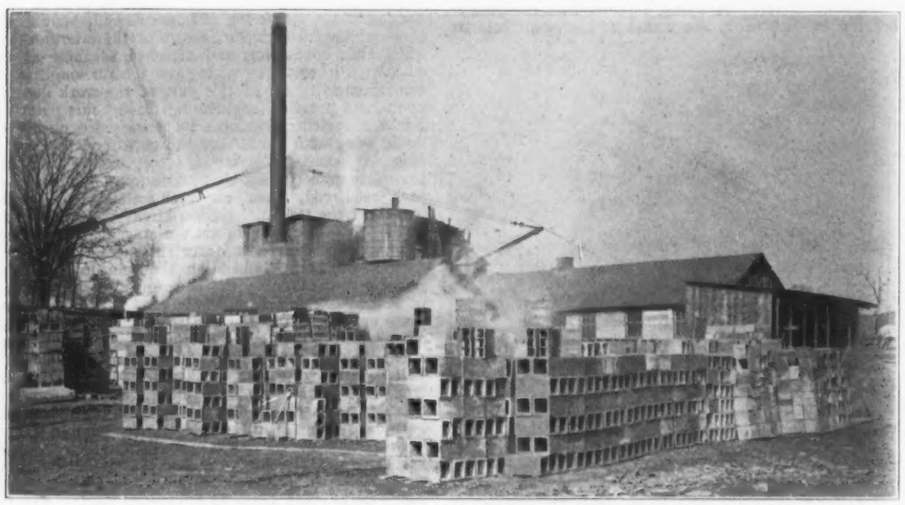
Making Flywheels of Concrete.

A new and novel use for cement is reported to have been put into effect in Johannesburg, South Africa. At one of the pumping stations on the Rand the engine is equipped with two concrete flywheels. Each of these weigh about 8,000 pounds and measure fourteen feet in diameter with a reinforced concrete rim. A cast iron boss is secured to the shaft, and into this sixteen arms, each made of four-inch pipe, are screwed. Near the outer ends of the arms a ring of one-quarter-inch iron plate is secured with lock nuts, and around the extreme ends of the arms is fixed a second sheet iron ring, which forms the periphery of the wheel. The space between the two rings is filled with concrete. The concrete rim is reinforced with four quarter-inch rods. The rim alone weighs about 6,000 pounds. As the wheel makes only twenty revolutions per minute their use involves no risk of serious accident, and they are reported to have proved very satisfactory. The difficulty of transporting iron is said to have led to the adoption of concrete.

WINNING THE MARKETS.

Pauly's Structural Tile Proves Its Merits by Its Instantaneous Popularity and Widening Scope of Utility.

A most radical improvement in new building materials of unquestioned high merit has been reached by the successful introduction upon a commercial basis of structural tile made of poured concrete. Albert A. Pauly of Youngstown, O., the inventor of the now famous system, as well as the mechanical devices for manufacturing this new product of the cement industry, is thoroughly awake to the money value of the whole class of concrete commodities which become a possibility by reason of his inventions. His own concern, the Concrete Stone and Sand Company, which is the leading sand and gravel producer of Northwestern Ohio, has established and equipped a factory in connection with their extensive sand operations to make structural tile in all the sizes and shapes required and in quantities to take care of the local demand, which is considerable, for Youngstown is a thriving and progressive city of a little more than 100,000 people, and underbuilt to such an extent that building operations are continuously very active. Concrete construction is naturally the favorite on account of the progressive attitude of the leading citizens, backed by able and exceptionally intelligent public officials and building authorities. No less than a dozen big buildings of concrete are either now under construction or are to be commenced in the very near future, among these last being the County Courthouse, which is to cost more than a million. The whole place is pervaded with a sentiment of enterprise and progress that is catching. Youngstown structural engineers and architects are out in the lead, quick to observe the merits of new materials and systems and ready to adopt the best obtainable as soon as it becomes known. It is, in short, the logical environment to call forth the inventive genius of Mr. Pauly to produce a new material of epoch-making importance in modern construction.



MANUFACTURING STRUCTURAL TILE OF POURED CONCRETE.
(Plant of the Concrete Stone and Sand Company, Youngstown, O.)

The structural tile really constitutes a mere branch of a large group of commodities that will eventually be produced under the Pauly system, although it is the branch first to be carried to the point of preparation for the market to the building trade. No tile with perfect plane surfaces and true corners has ever been obtained till now, and uniformity has heretofore been considered an impossibility. The new tile of poured concrete has all these invaluable structural qualifications, and besides it is the best fire-resister yet known and shows a wall-bearing value in compression tests equal to solid brick or stone. Beyond all this, it is the highest material obtainable for the purposes for which it is used, in this way materially increasing its value as a building material by relieving the dead load considerably without sacrifice of strength. The surface of a partition wall made of these concrete tile when carefully laid is so true that it can be finished by a "skin coat" without further cost.

In laying floor arches with these perfectly true tile the calculation of distances between beams, by using a uniform mortar joint, becomes a matter of mathematical exactness, and not a cut and fit proposition or a problem to be decided by the inspecting engineer on the job at great cost to provide a concrete filler where the unmatchable material refuses to fit. This new concrete tile gives the engineer a material with exact dimensions which has long been needed to bring the practice of concrete construction down to the perfect control of calculated design. It completely dispels the last vestige of criticism of concrete for all classes of construction by this inestimably valuable qualification.

The new tile factory is still incomplete, because the demand for the product has grown faster than the equipment can be built and installed. The first plans have been abandoned, while the work of making tile goes on night and day. When completed the factory will be just double the size first decided upon, but the supply of the local building trade will be sustained even if the machinery should have to be operated under temporary shelter until the activity of the building season comes to a close in the fall to give opportunity for properly housing the establishment.

Mr. Pauly is a practical factory manager of experience and capacity. He recognized the opportunities in his own market and provided the means to meet it. The complete victory of his material in the home market is the best argument to others that it will do equally well elsewhere.

In Youngstown, which is right at the edge of the greatest clay-working district in the United States, where probably more of the old imperfect clay tile are manufactured than any other locality, a veritable stronghold for clay products as it were, and where the low freight rates make structural tile cheaper than in most places, the prices of the clay goods have been duplicated, not because it was found necessary to do this when the superior value of the goods is taken into consideration, but because there was found a good profit in meeting these figures and winning the market without delay. No one could object to a far superior material offered without any advance in the price.

Concrete structural tile goes out to revolutionize the markets of the country, with the home city of its inventor already indorsing the material in the most substantial way. They won't have anything else but the new poured concrete tile in Youngstown.

It is going into the foundations, walls and partitions of cottages, handsome residences, factories, barns, garages, skyscrapers, and, in fact, every type of building where such a material has ever been used in the past, and new avenues seem to develop out of the economical suggestions of this handy commodity, for even a fence can be built of it better, more sightly and cheaper than wood.

One would gather from the foregoing, taken from the observations of a recent visit, that Mr. Pauly, the inventor of this wonderful new concrete material, is a busy man. And he is. Besides the general management of the plants he is negotiating for supplying plants with equipment to manufacture his tile at favorable locations in different parts of the country, East, West and South. The best aggregate material for making the tile is furnace slag properly graded as to fineness. Sand and graded gravel with pulverized cinders is another good one. Crushed limestone graded from coarse sand sizes to fine flour makes a most beautiful product of great strength, but of slightly less fire-resisting quality. Wherever such aggregates abound and a standard Portland cement is obtainable there is an opportunity for making the poured concrete tile with a good profit. There are very many such locations where the freight rate alone upon structural tile is a great big item.

Mr. Pauly is willing for the benefits and advantages of his inventions to reach every desirable market, but he has no cheaply quacked-up outfit to sell to a would-be manufacturer of tile without the capital to conduct such a business. He will not allow the use of his patented system or machinery to go into the hands of parties who are unable to reasonably take care of a market with sufficient equipment to meet the demands.

The inventor pays a splendid tribute to his business associates in Youngstown, who are the flower of the business brains and enterprise of his home city, by saying: "All of this success, for that is what it looks like, has been made possible by the faith and loyalty, encouragement and assistance of the members of my company here, and a few other staunch friends besides." This is a glimpse of the broad lines of the character of the man who has fathered a great invention, who has always made his own way in the world with his own abilities, and sensible of the helpful contact with his fellow-man.

Canadian Cement Men Meet.

MONTREAL, CAN., April 13.—A meeting of those interested in the manufacture and use of cement has been called to discuss the formation of a Canadian Cement Users' Association, at the King Edward Hotel, Toronto, on Easter Monday, 20th instant. Two meetings will be held, one at 11 in the morning and another at 3 in the afternoon. For a considerable time past the need of an organization to act in the interest of the trade, generally, has been recognized by those concerned in the production and use of cement, and Toronto, being near to the producing centers, was decided upon.

Directors at a Banquet.

ALLENTOWN, PA., April 10.—The directors of the Keystone Cement Block Company held their annual meeting in this city and followed it with a dinner served at Antler's Home. The meeting was held in the offices of the company and the election of officers resulted as follows: W. A. Cather, Pottsville, president; Hon. Fred E. Lewis, Allentown, secretary and treasurer; D. D. Trexler, general manager; Lloyd W. Mitchell, chief clerk. George H. Hardner was elected a director, as were the following: H. A. Moore, Norristown; Judge R. H. Koch, W. A. Cather, J. A. Dinger, and Clarence Messersmith, Pottsville; D. D. Trexler and Fred E. Lewis, Allentown. D. H. Gross of Norristown was the only director not present. The reports of the secretary and treasurer showed a prosperous year and excellent outlook for the ensuing year. The concern supplied the concrete blocks for the new office building of the L. V. Transit Company, and are now manufacturing block to be used in the addition to the Lehigh County jail.

All Laterals of Concrete.

COLORADO SPRINGS, COL., April 4.—By constructing all its canals and laterals of concrete the Beaver Land and Irrigation Company, composed largely of Colorado Springs men and operating in the Florence and Canon City district, promises to establish a precedent in irrigating in this State. The company proposes spending half a million dollars in developing its lands, and a large reservoir is included in the plans. The chief point of interest, however, for all who are interested in irrigation is the method of constructing the canals that will supply water to the laterals. These will be of concrete, built along the lines that have been successfully followed in California, where irrigation is used extensively.

There are a number of advantages in the use of concrete, notably the saving of the water, the prevention of breaks in the laterals and the permanency of the work. It is established that from 20 to 60 per cent of the supply is lost in the ordinary ditches and that frequent repairs are necessary to keep them effective.

While the cost of the concrete ditching is more at the outset, it is estimated that the system will prove to be economy in the long run. The new plan of the company is attracting wide interest, and it is expected that its course will be followed by other land corporations in development work.

Todd & Cragor, a new contracting firm at Kahoka, Ia., make a specialty of concrete floors, sidewalks, cellars, etc. Mr. Todd is a thorough mechanic and has completely mastered the art of concrete making, having done much of this work for the Santa Fe. Mr. Cragor is an expert finisher.

Where Only Concrete Can Be Used.

CLEVELAND, OHIO, April 10.—An attractive type of a cement block house is herewith produced, similar to those being built on the Schatzinger allotment in Cleveland, where buildings are restricted to this material. On the allotment, which is located in the East End of Cleveland, Ohio, there are already sixteen houses of this style, and more are planned. On another, called the Superior allotment, there are three or four more under way.

These houses, with lots 40 by 120 feet, sell for $5,000 each. They have eight rooms and are finished with modern conveniences to suit prospective buyers. The realty company has a plant, with ten block machines, which is kept busy most of the time turning out blocks for the homes in course of erection. If a person wishes to build his own house of concrete the blocks are sold at a nominal cost. The blocks are all of standard size and are composed of the best aggregate materials obtainable. Materials are shipped direct to the allotment, where they are converted into the cement block. These are made in different colors and sizes when desired.

The building company, to assure warm, dry buildings, has made a practice of erecting the walls of the houses and leaving them stand for about a year to "cure" out.

The allotment, unlike scores of similar propositions, is absolutely free from fear of fire.

Valuable Suggestions from an Inventor.

LOS ANGELES, CAL., April 10.—Mr. McMertrie, the inventor of the concrete block machine that is being put on the market by the Kimmerle Concrete

NEW M. E. CHURCH AT MEROM STATION, IND.
(Erected by Charles Mankedick & Son, Sullivan, Ind.)

Machinery Company, is also the inventor of a mixture he has named wood stone. This mixture in the dry resembles meal. For use in making molds from cut stone for imitating it of any size and style in concrete, this material is made into a paste and then placed on a board of proper size for the machine. In from thirty-six to forty-eight hours it sets and becomes so hard that it takes the place of iron molds. In some cases these molds have been in almost constant use for many months. While Mr. McMertrie is not willing to give the formula, the preparation is for sale and is being used by concrete blockmakers.

Charles Mankedick of Sullivan, Ind., has for a number of years been a successful builder in concrete block construction. On this page is shown the picture of the Methodist Episcopal Church at Merom Station, Ind, which was built by Mr. Mankedick. The latest role he appears in is as an inventor. He has designed a system of reinforced concrete bars which are adaptable for any form of concrete construction. It is especially adapted for silos, walls, floors, etc.

D. P. Ritter, of Newton, Kan., is making cement blocks of his own invention on a machine which has also been patented. They are 8x6" in size and are made in various designs for both sidewalk and corridor building, the inlaid colors and scrollwork being worked up in such a way that they are as permanent in both color and design as the cement itself.

THE USE OF CONCRETE AND CEMENT BLOCKS ON THE FARM.

BY H. E. MURPHY.

(Read before the Northwestern Cement Products Association at their late convention in Chicago.)

As a market for cement products the farm is well worth the serious consideration of any cement man who is located in an agricultural district. Your operations in any one instance may not be on a very grand scale, but if you are looking for a class of good steady customers, cultivate the farmer.

The farmer of today is as progressive as any of his city cousins. My experience among farmers has taught me that they are carrying on their business in a manner that is every bit as enlightened and up to date as the methods employed in any modern business. The farmer is quick to adopt any new device that will save labor or enable him to get a larger return on his investment.

The farm journals and agricultural schools are accomplishing great things in the improvement of farming conditions, and the average farmer is a ready—in fact, an eager student. And anyone who goes out to talk to the farmers on subjects that relate to the farm need not hesitate to use technical terms if he understands them, for he will find that farming is fast being reduced to a scientific basis, and most of the farmers are, to say the least, pretty well grounded in the rudiments of this science.

Another characteristic which makes the farmer a good customer for the cement man to cultivate is this: It is the ambition of all of them to see the farm stay in the family. The father wants to see the farm pass on to the son. And so he does not hesitate to make permanent improvements. He likes to feel that the things for which he is now struggling and sacrificing the best that is in him will be a source of profit or comfort to his children and his children's children.

The uses to which concrete may be put on the farm are as unlimited in their scope as in any other industry. You have a wide range from a dairy house to a piggery, from a residence to a root cellar. Foundations and barn floors, feeding troughs and mangers, water tanks and cisterns—you will find the farmer ready to put in all of these permanent improvements as fast as he can afford them.

And this reminds me of another point in favor of the farmer. He rarely enters into any undertaking which he cannot see his way clear to carrying out to a successful completion. He usually pays as he goes. The feeling of security as to the financial end of the transaction which this fact creates you will find a pleasant relief if you have been dealing with irresponsible and fly-by-night contractors.

The class of farms which the cement man finds most profitable are dairy farms, for concrete is the ideal building material for all buildings connected with this department. One of the first essentials to wholesome and successful dairying is cleanliness. So you can readily see that my point is well taken.

The cows in the first place must be kept as clean as possible, and it requires no argument of mine to show that a cement floor is best adapted to accomplish this. The advantages of a concrete manger are obvious, for cleanliness is just as important here as in any kitchen.

The dairy house must be kept clean and wholesome, and here again echo answers, "Concrete." And so on to the end of the chapter. In nearly every detail of permanent improvements concrete can be used to best advantage.

I have found the farmer very ready to take up the use of cement blocks in buildings of every kind. The manifold and manifest advantages of cement blocks, which we all know by heart and can repeat forward and backward, blindfolded or with one hand tied behind us, all apply to farm buildings. But there is one feature which makes them especially valuable for use on the farm. That is their fireproof qualities.

The farmer is, as a rule, more completely at the mercy of the fiery element than any other class. Marked advances have been made in all lines of agricultural methods and machinery, but the farmer of today is as helpless in case of fire as was his predecessor who cleared the land.

For this reason you will find that the fireproof qualities of cement blocks are a much stronger talking point in the country than in cities.

Another great point in your favor when your are figuring cement blocks on the farm is that the country mason as a rule takes very kindly to the blocks and with very little trouble can be taught to do really good work with them. The country mason usually works by the day, and I have yet to find one who was not willing to do a full day's work and I find that I can figure about 40 per cent less for mason labor here than with city masons and can compete very comfortably with common clay brick.

These masons are accustomed to working with rough and heavy field stones and find it a pleasant relief to lay the lighter and accurately molded cement blocks. While introducing the cement blocks among the city masons I have met with no little hindrance from these wielders of the trowel and I am sure that most of you have had the same sad experience. From the first I have met with a vastly different treatment from the country mason, and it is to him that I attribute very largely the success which we have met in introducing cement blocks among the farmers.

Approach the country mason in the right way and show him the mistakes he has made, when the owner is not too near the job, and you will find him a powerful ally, and one who is willing to learn the right way of laying your blocks to their best advantage.

The country storekeeper is another man who is worth cultivating. For here again the fire-resisting qualities as well as the superior appearance of the blocks are of special value. I have found the country storekeepers very easy to line up, for they are quick to see the advantages of cement blocks. Just get them to look over some of your good work and then tell them to compare it with the cheap galvanized iron imitations of their neighboring competitors, and you can start right in to draw up the contract.

Cheese factories and creameries are also very good fields for the cement man to browse in. For here, besides the fireproof qualities, you have the strong advantage of cleanliness in your favor.

Some of you may be inclined to think that I lay too much stress on the fireproof feature, but I assure you I am only telling you what experience has taught me to be true, and will give you an instance in support of this point.

Early last spring I was driving through the country hunting for trouble when I heard of a farmer whose house had burned down a short time before. I found him living with his family in a shed beside the ruins of the former home. I told him that I could build him a house superior in every way to the one he had lost. And further, if he did have the misfortune of another fire, he would at least have the walls of his house left. I left him in less than an hour with a contract in my inside pocket, and yet he had had no idea of building with cement blocks a few short minutes before. This proves, I think, the importance of dwelling on the fireproof qualities as well as what I said earlier in my talk about the readiness of the farmer to adopt a good thing when he sees it in the right light.

We have built quite a number of farm residences, country stores, cheese factories, etc., but there was nothing particularly distinctive about them to warrant my burdening you with the details of their construction. We have, however, specialized to a certain degree in one type of farm building which has attracted a small measure of not unpleasant notoriety among makers of cement blocks and block machinery. And while we make no pretensions to being pioneers, much less leaders in this branch of the industry, the chairman of the program committee has asked me to treat this subject somewhat in detail, as he thought it might prove interesting to at least some members of the association.

I refer to silos.

I want to apologize at the outset to those of my hearers—and I know there are many—who are better informed and better qualified to speak on this point than I am, for tiring you with details with which you are thoroughly familiar.

My authority for most of the statements I shall make are bulletins issued by the Agricultural Experiment Station of the University of Wisconsin. And if any of you desire to take issue with me on any of my points, I shall refer you to the source of my information. I shall quote several entire paragraphs from these bulletins and am advising you of it in advance so that no one can accuse me of plagiarism.

A silo is a building, usually circular in shape, which is designed for the storing of fodder while still green for subsequent feeding of cattle. The theory of a silo is identical with the canning of fresh fruits and vegetables for consumption by humans.

The silo is a cheap method of canning grass on a large scale, to be used by domestic animals at times and in places where it could not otherwise be had.

A CEMENT BLOCK HOUSE IN THE SCHATZINGER ALLOTMENT, CLEVELAND, O.

The essential condition for making and preserving a good quality of silage is the close packing of a suitable material in a receptacle from which the air may be completely excluded.

The fodder is cut before it matures so as to preserve its succulency, and is usually cut into small pieces so as to allow close packing.

As the silage settles there is a strong outward pressure, so that it is necessary to build the walls firm and rigid. This is the principal reason for building a silo circular instead of rectangular in shape.

While frost is not permanently harmful in silage, it is an advantage to make the walls as nearly frostproof as possible.

Silos are usually of stone, brick or frame construction. But of late there have been a great number of silos built of what are known as staves.

The stone silo, while making a very permanent and strong pile, is falling into disuse for the reason that in order to render the walls frostproof to even a small degree it is necessary to make the walls about two feet thick. Then, too, owing to the irregular shape and size of the ordinary field stone, the masonwork on this type of silo is a very difficult and expensive item.

The brick silo has not been very largely used for about the same reasons. Frame silos are not a success, because in the process of converting green fodder into silage acids and juices are liberated which cause a rapid decay of the lumber. The high prices of lumber also make this class of silos impracticable.

The class of silos which we have to compete with the hardest is what is known as the stave silo, and their sole advantage over the cement silo is their cheapness, but I regret to say that this advantage very often carries considerable weight.

A stave silo is built about on the same principle as a water tank. The staves are beveled so as to fit closely together and are fastened with hoops and bands. I will not attempt to go very deeply into the question of the defects of stave silos, for it is a point in which I feel so strongly and have talked so much that if I got thoroughly started and were not thrown out I am afraid I would take up the entire time of this meeting.

The stave silo is very much the same as a water tank, and as a silo is filled with its juicy contents about five months of the year and for the remaining seven months stands dry and empty the effect is the same as if a wooden water-tank would be left dry and empty during the summer months.

Continued on page 52.

The Concrete Industry in Mexico.

Consul General A. L. M. Gottschalk, of Mexico City, in a recent report of the Department of Commerce and Labor, makes the following observations with regard to the development of concrete as a structural material in Mexico:

There is practically an unlimited future for the use of concrete as a building material in this city as well as in the other large cities of the Mexican Republic, especially for the hollow concrete block. There are, I am told, in the capital city only some 300 houses built of concrete, but this comparatively small number is due to the fact that the material only began to find general acceptance with architects and builders a very short time ago, much prejudice having been felt against it owing to the fact that some years ago certain speculators undertook to launch upon the market concrete blocks of so poor a quality that they were universally condemned. This prejudice has, however, entirely disappeared. A very telling ocular demonstration of the strength and solidity of cement-block construction was afforded in this city in April, 1907, when an earthquake lasting two and one-half minutes, and causing a recorded sway of sixty centimeters in certain buildings in town, left utterly unscathed a residence building of concrete block, while countless numbers of neighboring houses were more or less damaged.

There are more than twenty manufacturers of concrete blocks or ornamental work in this city alone. The methods in use among them are usually of the crudest, with the exception of two concerns which import American molds. The system generally in vogue is to have molds made of plaster of paris into which the cement is run, after which the mold is pried or chipped off. Many manufacturers make their molds of a sort of elastic glue, commonly called "cola," whose composition I could not ascertain, which permit them to turn out numbers of very artistic undercut or scrolled pieces.

The importation of fancy molds, which covers only a few years' time and which, I am informed, has been almost exclusively from the United States, has not amounted to more than 1,500 Mexican pesos ($747 United States currency). A much greater number would of course be imported if our factories could turn out molds of the standard sizes in use in this country. As an example, the standard balustrade of balconies and cornices in the United States is between fifteen and eighteen inches high, with a diameter of five inches; in Mexico these balustrades are invariably sixty centimeters in height (approximately twenty-four inches). It may, however, be said that ornamental cement work is gradually supplanting the old-fashioned carved stone work which characterized all Mexican buildings of any pretensions until comparatively recently.

Imported molds for cement blocks are practically all of American make, though there is an occasional French or German one to be seen. The chief difficulty which works against the American manufacturer of cement block molds who desires to export these to Mexico, is the fact that American molds are never made to conform in size to the standard (metric) measurements in use by Mexican architects and builders. Moreover, the Mexican architect, still bound by the traditions of old Spanish engineering, is much inclined to believe that a wall less than sixteen inches thick can hardly be of sufficient strength to stand.

REINFORCED CONCRETE.

It is only quite recently that the system of reinforced or "armored" concrete for buildings has been taken up by Mexican architects. Up to the present time there are but few examples of such buildings in this city, one or two of them large dry goods stores. The systems best known are the Kahn (of the United States) and the Hennebique. Four such new buildings are about being completed.

Steel bars for reinforcing have been imported, but only in small quantities thus far, from the United States. Some expanded metal of English manufacture and some American rib metal have also been imported. Quite recently a fairly heavy tonnage of corrugated bars and similar material has been ordered by the Mexican government from two American concerns.

RESIDENCE OF PERCY A. ROCKEFELLER, GREENWICH, CONN.

A Millionaire's Concrete Residence.

NEW YORK, April 13.—What is undoubtedly one of the largest and most artistic examples of concrete construction as applied to residential building is the new home of Percy A. Rockefeller at Greenwich, Conn. The structure is by no means the result of the economical mood of a millionaire, as will be realized when it is stated that its cost is over $500,000.

The entire building is of reinforced concrete construction, the exterior being faced in a white stucco, a combination of marble dust, lime and cement, which presents a dazzling white appearance. This exterior finish was executed by R. B. Eason of New York, while the general contract for the building was awarded to H. W. Dederick of Elizabeth, N. J., and the reinforced construction was executed by the Reinforced Cement Construction Company of 1 Madison Avenue, New York.

Atlas Portland cement was used exclusively throughout the entire construction. The plastering throughout the magnificent residence was done with Ivory cement plaster, furnished by the United States Gypsum Company, through their New York office at 1123 Broadway, which is under the management of Harry Hobart. The amount of plastering in the building is about 12,000 yards.

C. F. Behrens, manager for the Forest Glen Land Company, Baltimore, has just ordered from the Ideal Concrete Machinery Company of South Bend, Ind., an equipment of machines for the manufacture of concrete blocks. The machines will be used for the manufacture of blocks for houses which the company is about to erect.

Tunnel Builders Hosts at Banquet.

NEW YORK, April 3.—S. Pearson & Son, the English firm having the general contract for the construction of the four Pennsylvania Railroad tunnels under the East River, were the hosts at a banquet given to many of the most prominent civil engineers and railroad magnates of the country at Sherry's last night. E. W. Moir, vice-president of the firm, acted as toastmaster, and among those present were all who had been prominently identified with the gigantic task of boring the big tubes beneath the river. The banquet was given especially in celebration of the joining of the four tubes, which have been driven from both sides of the river until they met in the middle.

Among the Pennsylvania Railroad officials in attendance were President James McCrea, Vice-President John P. Green, General Counsel George V. Massey, D. W. Wickersham, H. W. Taft, Henry Japp, managing engineer, and Dr. Pritchard. Others present were: W. W. Atterbury, general manager of the Pennsylvania Company; N. P. Shortridge, W. H. Barnes, George Wood, Rudulph Ellis, C. E. Ingersoll and Percival Roberts, Jr., directors of the Pennsylvania Company; Ralph Peters, president of the Long Island Railroad; Andrew Freedman, Charles M. J. Degnon, De Lancy Nicoll, J. E. Gaffney, John D. Crimmins and W. J. Wilgus.

$69,000,000 Spent on Terminals.

NEW YORK, April 18.—On account of its being the most gigantic undertaking by any railroad in this country, special interest attaches to the financing and construction of the Pennsylvania Railroad's large tunnels under the Hudson and East Rivers and through New York City, which will be completed by the erection of the largest terminal station in the world. The cost of the immense tubes and the vast terminal which is being built at Seventh Avenue and Thirty-first Street, running two blocks in each direction, is now expected to be considerably more than the original estimate of $100,000,000.

A recent report of the road shows that there has been thus far expended on the tunnels a total of $69,541,414, of which a sum only a little over $39,500,000 has been capitalized, the balance being charged off through the profit and loss account. It is said that substantial credits to be applied against the cost of the tunnel and terminal work will come from the sale of surplus real estate, which the road has acquired and which will not be permanently needed by the company. In 1907 the Government purchased from the railroad company the Postoffice site on Eighth Avenue for a sum approximating $1,600,000.

Concerning the progress of the present undertaking, President McCrea, in his report to the stockholders of the road, says: "The progress upon the tunnel extension has been satisfactory, although it has necessarily been delayed by the engineering, legal and municipal questions inseparable from so extensive an undertaking. It is expected that the entire work upon the tunnel and terminal stations will be completed in 1910."

ROCK PRODUCTS presents in this number two examples of practical concrete block structure in the State of Nebraska. One is a garage built by the Lincoln Stone and Supply Company at Lincoln and the other is a store structure erected by W. A. Wheeler at Atkinson, Neb.

GARAGE BUILT BY LINCOLN STONE AND SUPPLY COMPANY, LINCOLN, NEB.

Concrete as Ship Armor.

GLASGOW, SCOTLAND, March 30.—Although reinforced concrete has come to be extensively used in the construction of important buildings for various purposes, engineers who practice the system have not quite reached the stage which has been reached in Italy of suggesting it as a substitute for steel armor on warships. Signor L. d'Adda, an Italian naval engineer, has made a proposal to that effect, and the ministry of marine has been induced to experiment with armor of the kind at Muggiano.

One of the best known British experts says that undoubtedly ferro-concrete possessed remarkable resistance to shocks of the most severe kind, and when suitably reinforced it had been shown to be most valuable as a protection against heavy projectiles. At Port Arthur, Hennebique ferro-concrete had been extensively used, he said, in the Russian fortifications, and the Japanese had also employed it for some of their casemates. The toughness and elasticity produced by a proper system of reinforcement was greater, he claimed, than could be obtained with solid plating, and there did not seem to be any doubt that in the near future the material would be far more extensively employed for protection against artillery than it had been in the past. Not being a naval architect, this expert did not feel qualified to speak with regard to the questions of weight and space. Signor d'Adda, however, claims that the weight would be about the same and the space occupied not more than with metal armor. The cost would be very much less.

Reinforced concrete has actually been employed in shipbuilding. In the first Paris Exposition in 1855, according to the Chicago *News*, a small boat made of reinforced concrete was exhibited by Lambot. This vessel, which was constructed of wire netting covered with cement, is still afloat and will soon be installed in a technical museum. It was regarded as a mere curiosity and led to no practical result. In 1896 Gabillini of Rome built an experimental vessel of reinforced concrete, which is still in service on the Tiber and in excellent condition. The same firm has since constructed a large number of concrete vessels designed chiefly for stationary service as bridge pontoons, for which purpose they are eminently fitted, owing to the slight cost of maintenance, as they need not even be painted.

It is possible to build vessels of reinforced concrete of any desired form and dimensions. The frames and longitudinal beams are made of concrete reinforced with round bars of iron, and the skin consists of a single or double layer of concrete stiffened with wire netting and made perfectly smooth and water-tight by an external coat of pure cement. The boats cost almost nothing for maintenance, are fireproof and can be constructed almost anywhere. They cost about half as much as iron vessels of the same capacity. Their independence of regular shipyards makes them especially suitable for colonies and isolated inland waters.

Increased Demand for Concrete in Dixie.

CINCINNATI, O., April 8.—H. W. Miller, president and general manager of Miller Bros., railroad contractors of North Vernon, Ind., was in the city yesterday on account of the opening of bids for the elevated Cincinnati Southern terminals. The firm is one of the largest on concrete work in the country, and has just completed heavy contracts on the South and West Road in North Carolina and on the Southern system near Lynchburg, Va., the latter involving the construction of reinforced concrete abutments from 90 to 110 feet in height. At the Grand Hotel last evening Mr. Miller said:

"There is at least one place where man improves on nature, and that is in making concrete superior to stone, which explains why concrete is taking the place of stone on railroad, bridge and other similar work. Imperfections develop in even the most carefully selected stone after it is in place, and it is liable to crack, get soft and disintegrate. Concrete, on the contrary, gets harder and improves with age, and is not affected, as is stone, by climatic conditions. It is only a question of a little time when it will take the place of stone in all construction work. It has also taken the place of wood, or timbers, in many cases. For example, the old wooden piles are now superseded by concrete piles, which can be made of any size and driven down to any depth. There is comparatively little railroad work in sight, and we are turning our attention this year more to public work in cities. Last week we secured a contract to lay about $40,000 of concrete sidewalks in Madison, Ind., and there are other similar contracts in prospect. As an example of how the South is wakening up and improving, we are now bidding on twenty-one miles of concrete walks in Newbern, N. C., and fourteen miles in Wilson, N. C. The old day of 'stepping stones' and dirt walks down there is rapidly passing away."

New Incorporations.

At Elmore, Minn., the Elmore Cement and Tile Company. Capital, $20,000. Incorporators: C. F. Henkel, J. F. Wentz, B. J. Maland, C. W. Ivery, Fred Sahr, S. H. Taylor, W. S. Drake, H. E. Stewart, A. M. Schaecke and W. O. Dustin, Elmore.

In New York City, the Lake Stone Company of Brooklyn, to manufacture cement, stone and brick. Capital, $100,000. Incorporators: Cornelius E. Heddink, 170 Eldert street; Robert E. Rendell, 105 Fifth avenue; William S. Swift, 442 Third street, all of Brooklyn; Alfred J. Swift, 262 West Twenty-fourth street, New York; H. A. Munford, Newark, N. J.

At Indianapolis, Ind., the Pierce Cement Block Company. Capital, $2,000. Directors: Everett Pierce, Carl G. Fisher, James A. Allison and Burt D. Pierce.

At Rome, N. Y., the Rome Cement Company, to manufacture and sell artificial stone, concrete blocks, bricks and building materials. Capital, $5,000. Incorporators: Walter C. Harrington, Edwin B. Smith and Stoddard M. Stevens.

At Galva, Ill., the Cement Block and Brick Company, to manufacture concrete products. Capital, $5,000. Incorporators: V. L. Short, A. F. Deem, M. A. Adams.

At Portland, N. Y., the Portland Concrete Company, to deal in cement and concrete products and supplies. Capital, $15,000. Incorporators: James G. Correll, Louis A. Correll, Francis C. Bertram, Donna P. Bertram of Portland, and John L. Campbell of Brocton.

At Springfield, Mass., the Standard Concrete and

STORE ERECTED BY W. A. WHEELER, ATKINSON, NEB.

Construction Company. Capital, $25,000. Incorporators: H. Ude, Suffield, Conn., and E. M. Kuehler, Springfield.

At Chicago, Ill., the Pleas Concrete Construction Company, for general contracting work. Capital, $25,000. Incorporators: H. F. Peterson, J. B. Synnestvedt, E. C. Rockwell and E. Rockwell, Chicago.

At Terre Haute, Ind., the Littlefield Concrete and Gravel Company, to manufacture and sell artificial stone, concrete blocks and conduit pipes. Capital, $10,000. Directors: William Littlefield, Charles E. Davis, James Mullikin, William Baker and Clara Davis.

At Hartford, Conn., the Meriden Concrete Company. Capital, $5,000. Incorporators: Henry A. Chaffee, Edward L. Montgomery and Arthur A. Bradshaw.

At Norfolk, Va., the Consolvo Stone Company, to manufacture artificial stone of all kinds for building and other purposes. Capital, $5,000 to $25,000. G. T. Banks, president; E. H. Consolvo, secretary and treasurer, and these, with Architect J. W. Lee, compose the board of directors.

At Baltimore, Md., the Enterprise Concrete Construction Company, for the erection and construction of buildings. Capital, $10,000. Incorporators: Harry C. Kilmer, Arthur E. Green, James E. Godwin, Oliver M. Masters and A. Samuel Taft.

Professor Thomas S. Cole, superintendent of the Chester, Pa., public schools, recommends that the flooring in the hallways of all school buildings be constructed of concrete instead of wood.

H. H. Clough and his son Karl are about to establish a concrete block plant at Lorain, O.

At Ennis, Tex., the County Commissioners are experimenting on the use of concrete for culverts.

Davis & Thompson, Montgomery, Ala., have finished the artificial stone work on the grounds of the Capitol.

Ernest Ballweg has opened a plant for the manufacture of concrete blocks at 719 Commercial Street, Emporia, Kan.

The Board of Education of Woodstock, Can., are considering the proposition to construct school-houses of concrete blocks.

E. A. Eberhardt, Gilberts, Ill., writes ROCK PRODUCTS that he contemplates going into the concrete block business on an extensive scale.

Kyle & Dugan, Columbus, O., are completing the contract for the erection of a reinforced concrete building for the Gwinn Milling Company.

G. W. Carey and J. H. Reed have opened offices in the Perry Building, Philadelphia, Pa., and will engage in the concrete construction, fireproofing and paving business.

The National Concrete Vault Company has just been established at 503 Queen Street West, Toronto, Ont., and will engage there in the manufacture of concrete cases for coffins.

O. L. Smith and F. P. Field of Quincy, Mich., have organized the firm of Smith & Field, and will erect a plant for the manufacture of cement products, such as tile, brick, blocks, shingles, etc.

Niles Calanan, concrete contractor, Laramie, Wyo., has the contract for the building of a number of concrete dipping vats on ranches. The cattle on the Laramie plains have been ordered dipped by the ranchmen.

A. Fairchild, Holton, Kan., has commenced work on his new plant for the manufacture of concrete building blocks and tile. The plant is being erected on the site of a sand pit, and the machinery will be installed as soon as it is received.

L. C. Marshall & Son, Lewes, Del., are laying a 20-inch concrete foundation and George H. Orton is manufacturing concrete blocks for the walls of the new town hall at that place. It is to be an attractive one-story structure with a seating capacity of 600.

The annual meeting of the Jamestown Hollow Cement Stone Company, Jamestown, N. Y., held recently, resulted in the following officers being elected: President, S. V. Vandervoort; vice-president, S. A. Vandervoort; secretary-treasurer, C. R. Vandervoort.

H. B. Emely and C. R. Bell, of the Western Concrete and Quarrying Company, Rawlins, Wyo., have secured a number of contracts for cement sidewalks and expect to do a big business in that line this season. They have arranged for the shipment of gravel from Steele by the carload.

The name of the Concrete Construction Company, of Green Bay, Wis., has been changed to the McGrath Construction Company. The concern is now owned by T. J. McGrath and W. H. Field. All the machinery and business has been taken over by the new company, and they will operate on a larger scale.

The Lake Stone Company is a new concern at Paterson, N. J., which has acquired property on Paterson Avenue and will erect a large establishment there for the manufacture of artificial stone. Robert L. Shaw is president of the company, James L. Taylor secretary and Cyrus Berdan treasurer. The patent process of Albert Lake will be used.

I. E. Mather, of Indianapolis, has been elected general manager of the Standard Sand and Concrete Company, which has the contract for the foundation material for the new plant of the American Case and Register Company at Salem, O., and will also furnish the material for the new mill of the Foltz Milling Company.

The Lake City Stone Company, Dunkirk, N. Y., has installed a complete set of machinery for the manufacture of concrete blocks. It consists of a concrete mixer, automatic tampers and concrete block machines, all of which will be operated by power. The blocks will be steamed in a kiln for curing. They also expect to extend their line by making concrete burial vaults.

The Wilkes-Barre Cement Brick Company, Wilkes-Barre, Pa., a newly organized concern to manufacture bricks of sand and cement, have started active operations on Jackson Street, near the Lehigh Valley Railroad. Ultimately it is anticipated that the capacity of the plant will be 30,000 bricks a day. The men backing the company are most all of them from Wilkes-Barre. The president is R. A. Reed; vice-president, J. E. McKeon; secretary, George Russell; treasurer, Lewis Becker, who, with the following, are the directors: Henry Sweitzer, John MacDonald, Thomas Wilson, J. H. Bentz. The superintendent of the concern is George Russell.

CONCRETE ENGINEERING

ENGINEERS ON CONSERVATION.

Meeting of the Engineering Profession to Consider the Preservation of Natural Resources.

NEW YORK, April 15.—A meeting was held last evening in the auditorium of the Engineering Societies Building, under the auspices of the American Society of Mechanical Engineers, in response to the invitation of President Roosevelt to engineers to cooperate for securing the conservation of our natural resources. A letter was read from the President expressing gratification at the zeal with which engineers had taken up this problem.

The meeting was presided over by J. W. Lieb, Jr., vice-president of the society, who called attention to the fact that the first President of the United States was an engineer who was interested in the development of waterways. Dr. W. J. McGee, chief of the Bureau of Soils, Washington, D. C., followed with an address on "The Conservation of the Water and Woods," calling this the most important subject now before the people. The country began with a revolution in which there was war; but it is now time for a great revolution without war in which there shall be an awakening of a moral sense of obligation for the preservation of natural resources. One of the losses confronting the people of the United States is the loss of ground water. Too much flows away in torrents, because of the destruction of the forests. Instead of acting like a sponge, the earth, when stripped of its timber, sheds water like the roof of a building. The fertile soil washed away in the United States represents an annual loss of over $1,000,000,000.

Dr. W. F. M. Goss, dean of the College of Engineering, University of Illinois, spoke upon "The Conservation of the Nation's Fuel Supply," saying that economy in its production and use is to be enforced by a four-fold process. The necessary steps are: Scientific research for the establishment of facts; practical demonstrations of facts thus developed on a scale which will convince men that there is profit, direct or indirect, in a better practice; restrictive legislation which will protect the public from the competition of unscrupulous men; and finally, effective inspection which will secure an enforcement of law. The process cannot successfully begin with coercion; it must begin with education.

Prof. George F. Swain of the Massachusetts Institute of Technology, Boston, presented the subject of "Stream Flow, Water Power and Navigation." The most effective way of regulating stream flow is by preservation of the forests, and this produces three effects of great importance. It conserves one of our greatest natural resources—water power; it prevents erosion of the soil; and it prevents the silting of navigable rivers and harbors as well as of reservoirs.

The concluding address, by Dr. Henry S. Pritchett, president of the Carnegie Foundation, treated of the attitude of the engineer toward the public. Engineering has grown into a profession that must consider public interests. The practical demonstration of professional ideals lies in the use of fair judgment, a sound sense of justice, and quick appreciation of the larger public causes. The engineer not only plans, but carries out great enterprises. If he be a true member of his profession he will, while serving loyally his employer, keep in mind the honor of his profession, the debt he owes to it and the service to the larger interests of humanity.

New Municipal Building at Seattle.

The illustrations herewith show interior and exterior views of the new Municipal Building at Seattle, Wash., now in course of construction. The owner of this structure is the city of Seattle, and the cost, exclusive of finish and grounds, is $300,000. James Parke and Hans Pederson are the contractors. The plans provide for a jail on the top floor, police headquarters on the ground floor, the remaining stories being occupied by municipal offices. Sunflower cement was used exclusively in this building, and it was furnished by S. W. R. Dally of Seattle, whose office is in the Colman Building and warehouses at the foot of University Street. Mr. Dally writes ROCK PRODUCTS: "Contractor James Parke selected the Sunflower brand on account of its quality. He was offered other brands at less money, but, as he expressed it, he wanted something he 'did not have to guess about.'" The floors, columns and ceilings in the Municipal Building are all reinforced concrete. The structure is a skeleton frame of steel and reinforcing fabric.

S. W. R. Dally is the leading dealer in his section in standard building materials. He is enthusiastic over the favor which the Sunflower brand is meeting all over the Northwest and reports that he has only one report from all the customers who use it—that it is unexcelled.

Notes Progress in New York.

PHILADELPHIA, PA., April 20.—Richard L. Humphrey, president of the National Association of Cement Users, dropped in at the Bellevue-Stratford Hotel, Philadelphia, during the recent quarterly meeting of the American Association of Portland Cement Manufacturers. To a representative of ROCK PRODUCTS he said that he was in the East especially to confer with the committee having in charge the revision of the New York City building code as regards cement and reinforced concrete construction. In speaking of the late progress of concrete in establishing itself among the building materials used in the metropolis, Mr. Humphrey expressed gratification. "Although great headway has been made in the introduction of concrete for the construction of factories, warehouses and office buildings in New York," said he, "I predict still greater success within the near future. Time will show, and in fact it is now evident, that reinforced concrete will stand every test far more satisfactorily than the materials now commonly used in construction in New York. From this time forth we may expect great developments in concrete construction in that city." Mr. Humphrey commented upon the late Buffalo convention as an event which will be productive of great good. It compelled the attention of the Eastern field and its teachings would be conducive of great good in this quarter.

Mr. Humphrey's residence is located in a Philadelphia suburb, and in speaking of conditions in this city he referred to the Walnut Lane Bridge, now being built in Fairmont Park. "This bridge," he explained, "was originally planned to be constructed of cut stone, but it was found that the appropriation was not sufficient. It was then suggested to erect a bridge composed of like proportions of stone and concrete. After figuring it was found that the appropriation would not allow this course, and at last concrete was decided upon as the sole material to be used in the construction. The bridge is now well under way and being erected at a safe margin under the appropriation found too small for a stone, or half-stone, structure. So you see economy is not the least virtue of cement construction."

Monument to Inventor of Reinforced Concrete.

A fund is being raised to erect a suitable monument in memory of Joseph Monier, the inventor of "ciment armé" or reinforced concrete. The monument to be erected in Paris, where Monier made the first combination of steel and concrete in the form of a flower vase.

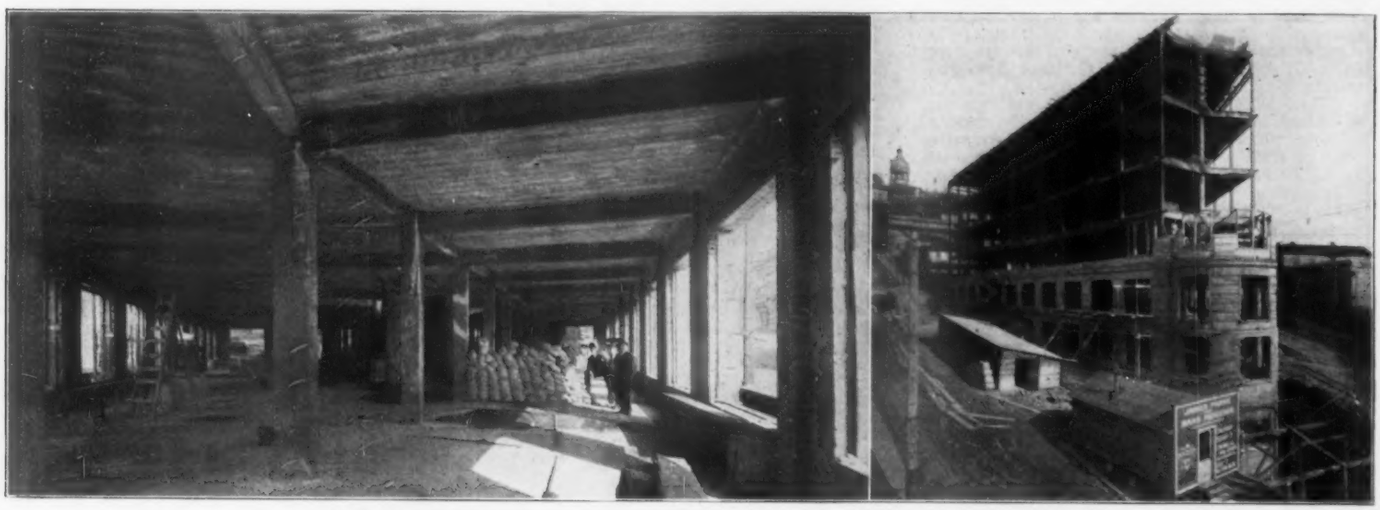
This was the beginning of reinforced concrete, which has now grown into an industry of vast magnitude. The inventor took out several patents, the first in 1867, when reinforced concrete was first used in buildings and bridge construction. It was not much used in the United States until John F. Golding introduced his invention, reinforcing concrete with steel. Since then it has developed expanded metal, wire and rods. It is estimated by the rolling mills that 300,000 tons of turned bars are now used annually for reinforced concrete construction. American genius has developed this method of construction far ahead of any of the foreign countries in which the system was first practiced.

Large Concrete Contracts.

The Turner Construction Company, 11 Broadway, New York, report that they have been awarded the contract for the six floors, roof and interior columns of reinforced concrete of a large stable for the American Transfer Company. The building, which is 52x85, will be located at 22-26 Little West Twelfth Street, New York City. John M. Baker is the architect.

The same company has received another contract from the J. G. Christopher Company, dealers in machinery and mill supplies, for a reinforced concrete warehouse, 105x105, two stories high, to be erected at Jacksonville, Fla.

City Engineer Cellarius, of Dayton, O., has submitted to the City Council plans, specifications and estimates of costs for a proposed concrete bridge connecting the suburb of Dayton View with the central section of the city. The estimate called for an appropriation of $160,000. It was accepted and the matter referred to a committee to prepare the bond.



INTERIOR AND EXTERIOR VIEWS OF THE NEW MUNICIPAL BUILDING AT SEATTLE.

THE INDIANAPOLIS BOARD OF TRADE.

Continued from page 3.

annexed to the auditorium by opening a set of "accordion" doors; the president and secretary's offices; a dining-room with its adjacent kitchen and pantries; a handsome library, smoking-room and committee-rooms decorated and furnished in the best of taste.

The building was originally designed for a steel skeleton with hollow tile arches between I beams and with hollow tile fireproofing of columns, beams and girders, but in the competitive letting the alternate design allowed by the specifications for the complete reinforced concrete skeleton building, with concrete floors, proved to be much more economical, saving $12,000 over the original design as outlined above. Various designs and systems of reinforced concrete were considered, the choice finally being given to the Kahn system. The actual construction of the reinforced concrete work was executed by the Moore-Mansfield Construction Company of Indianapolis, who are specialists in the construction of reinforced concrete buildings.

From a structural standpoint the Board of Trade Building is the type known as a reinforced concrete skeleton, in which the outside walls up to the grade line are all plain concrete between the reinforced concrete columns, which extend down to reinforced concrete spread footings. These concrete columns carry the entire loads that come on the building, including the weight of the exterior facing of stone, brick and terra cotta, as described above.

The floors are of the well known type advocated by the Kahn system of combination semi-porous tile and concrete, wherein the consecutive rows of tile, separated by 4-inch spaces, are laid over all floor areas, and in such 4-inch space is placed a Kahn bar of the proper size for the span and same then filled with a rich mixture of Portland cement concrete, such concrete extending above the tile to form 1 inch to 2 inches of concrete surface over the upper portion of the tile. The tile in this construction, therefore, forms a separator between a series of concrete joists and acts as a filler to secure a flat ceiling and also as an insulator.

The building itself occupies practically three sides of a hollow square. It is located, as before mentioned, on a corner, and has a wing of 100 feet 6 inches by 45 feet on Ohio Street, a frontage of 120 feet on Meridian Street, and a wing on the alley adjoining of 45x135 feet. There is a large, well lighted basement under the structure and extending under the Ohio Street sidewalk. The aggregate area of floor and roof construction is 113,000 square feet, with an addition of 1,500 square feet of sidewalk covering on the Ohio Street side.

All footings, columns, girders, beams, floor slabs, sidewalk slabs and roof are of reinforced concrete. The floor-slab spans are in general about 21′ 10″, and give an absolutely flat ceiling, free from all cross beams. The girder spans supporting the floor slabs vary from a general use of 22 feet up to girders 44 feet long, spanning the auditorium. The live loads used in the calculation of the structure were 150 pounds to the square foot for the first floor and the auditorium, on the seventh floor, and seventy-five pounds per square foot for the remainder of the building.

Lehigh Portland cement was used exclusively in this building, and the results as shown in the concrete in the structure demonstrate the uniform good quality of the cement furnished.

The design for the reinforced concrete structural part of the building was prepared by the Mansfield Engineering Company in conjunction with W. K. Eldridge, the structural engineer, and each and every point was considered in comparison with the original design for steel before approval was given.

The Moore-Mansfield Construction Company is composed of the same individuals as the Mansfield Engineering Company, and forms the construction department for the latter, and during the construction of the building the work was at all times under the supervision of a complete engineering organization, consisting of Mr. DeWitt V. Moore, chief engineer of the Moore-Mansfield Construction Company, a designing engineer for the Mansfield Engineering Company, a construction engineer on the work in charge of the placing of steel and false work, and a corps of thoroughly experienced superintendents and foremen in charge of every department of the work, and it is safe to say that the requirements of the design were completely realized.

MARBLE STAIRWAY IN BOARD OF TRADE BUILDING, INDIANAPOLIS.

THE NEW BOARD OF TRADE BUILDING AT INDIANAPOLIS.

The construction of the building was begun in February, but the resulting bad weather during the months of February, March and April of the year 1906 delayed the work of excavating and foundations, and work did not really begin until practically the first of May, when active work was started on the superstructure. The beginning of the first floor work and erecting of forms is well illustrated by Fig. 1, which shows a view of the work on May 3, 1906. From this time on the work proceeded rapidly until on July 6, as shown by Fig. 2, the fifth floor being completed. This view is a typical one of the manner of construction and shows very clearly not only the completed work, but also the work still enclosed in forms, and also on the fifth floor, the construction of forms and centers before the placing of the concrete. The black on the lower portions of the first floor columns is caused by the painting of the concrete with asphaltum to protect the stone facing from staining.

Fig. 3 shows the building complete with the workmen putting the last concrete on the roof. This view also shows the stone work and the progress of the brick work and also illustrates the general form of the building, showing as it does the interior court. The rear view of the building showing the court and also the excellent character of the general construction both of concrete and brick work is further illustrated by Fig. 4.

Fig. 5 shows typical details of the construction of the reinforced concrete portion of the building and the opening for the elliptical stairway from the main lobby.

This is the first and only complete reinforced concrete office building at the present time in the city of Indianapolis. Others are now being erected and still others are being planned, however, the Board of Trade Building being generally acknowledged such a complete success that it must be numbered among the triumphs of reinforced concrete construction. It has now been completed and occupied over a year and there are no cracks or other defects, either caused by construction or by use of the building, visible throughout the structure from the basement to the roof. The building is pronounced by those qualified to judge as being the best building in the city, and it is also stated by the fire insurance people that it is the best risk in the city. It demonstrates conclusively the adaptability and actual results, and shows that, from considerations of cost and permanency of investment, it is far superior to the ordinary and older types of construction.

D. W. Williams of San Marcos, Tex., is about to put in a cement block plant at Nixon, Tex., in which place fourteen houses are now under construction.

A Busy California Concern.

STOCKTON, CAL., April 19.—Doubtless the largest company doing business at Stockton as general contractors for steel construction, fireproof buildings, bridges, wharves and asphalt paving, is the Clark & Henery Construction Company, whose offices are in the Clark & Henery Building. Samuel Henery, vice-president and manager, informed the ROCK PRODUCTS correspondent that they have used upwards of 20,000 barrels of Portland cement during the present year, principally the Golden Gate brand. They have a crushing plant and use an Austin crusher. Much of the stone used is brought in by rail from Dredge, near Folsom. The company are the contractors for building the water front for the city, a concrete job in which piling is being sunk for foundation and a cofferdam is required in the construction of the work which is 7 feet wide at the bottom and tapers to 3½ feet. The depth of the concrete work is 15 feet. The company recently constructed a reinforced concrete sewer for the city of Sacramento, 7 feet in diameter. At present they are doing considerable street work in Stockton. The company uses oil as fuel and brings it by water to Stockton in cargo lots.

Concrete Popular in Florida.

JACKSONVILLE, FLA., April 17.—The Jacksonville Concrete Company, which was formed and commenced work only last June, has made splendid progress since that time. It is equipped with a thoroughly up-to-date plant, at 530 Riverside Avenue, this location having the advantage of a riverfront where lighters can discharge cement, sand and other materials required in the manufacture of concrete stone, or embark the finished article for delivery at the nearest point to that where needed.

The city office in Jacksonville is at 112 West Forsyth Street. The company makes practicaliy everything that can be turned out in artificial stone, such as pressed brick, hollow or solid, architectural decorations of all descriptions, columns, copings, sidewalk and drainage tiles, shingles; also flower vases, mantels, garden chairs, and burial vaults and cemetery work. There are other lines too numerous to mention. Since work was commenced contracts have been accepted for several miles of concrete sidewalks and the tiles have been supplied and laid most satisfactorily. Among many other erections now under way is the Methodist Church on Estelle Street, and the handsome residence of F. A. P. Jones on Riverside Avenue has just been completed.

Owing to the increased cost of lumber, the utility, cheapness and artistic possibilities of concrete have come to be more fully recognized by the public during the last few years. The company is adding constantly to its valuable plant new machinery for minimizing the cost of its output and for making the products more perfect, where possible; also for the utiiization of concrete for purposes for which that material has heretofore been neglected.

It now proposes to install a thoroughly practical cement drain-tile machine, turning out 3,000 4, 5, 6, 7, 8, 10 or 12-inch tile in ten hours, and drain tiles are something which the conditions in Florida render exceptionally useful; also a new machine for the manufacture of shingles.

The Jacksonville Concrete Company has also taken up the agency of the Edison Portland Cement Company.

The officers of the company form an exceptionally strong team. The president and manager, Fred Ogram, after many years' experience in architectural construction and practical building in England, came to Florida in 1890, and has made his home in Jacksonville for the last fourteen years. H. A. Renfroe, the vice-president, is a native of Georgia, but has resided in this city for the past eight years, and has been interested first in mercantile and latterly in the real estate business; while A. J. Hedrick, the secretary and treasurer, a Texan, of military parentage, is well known as chief of one of the leading real estate houses of the city.

Concrete-Steel Railway Ties.

A concrete-steel tie which thus far has proven satisfactory is now being tested in the tracks of the Chicago and Alton and the Pere Marquette roads. As will be seen from the illustration and diagram herewith each rail rests on a wood cushion supported by solid concrete blocks. Steel channels connect these blocks running through each and forming a continuous tie. The wood cushion is held in place by a shoulder on the concrete block, to which it is bolted securely. The concrete steel ties in use on the Chicago and Alton are just north of Lockport and are laid on ordinary ballast, while those on the Pere Marquette are along Jefferson Avenue in Bay City, Mich., and are laid on a concrete bed.

CONCRETE-STEEL TIES ON CHICAGO AND ALTON ROADBED.

Mechanical tests of the ties have shown that it requires a load of 90,000 pounds on the rail to cause failure in the half tie, acting as a beam and placed on supports spaced two feet in the clear, the load being applied centrally. The adhesion test shows that it requires 303 pounds per square inch of metal surface to cause slippage. A test of a block of broken stone concrete containing channels and resting on gravel so that the conditions might be similar to those in actual service resulted in failure of the concrete under a load of 82,400 pounds.

The question of renewal of the hardwood blocks, if necessary, can be solved in three ways: by removing the tie entirely from the track, as is the case with the ordinary tie, renewing the blocks and replacing, or by raising the rail enough to allow the blocks to be lifted over the tops of the bolts, or by having the blocks made in longitudinal halves. It is believed, however, that these hardwood cushion blocks when properly preserved will last as long as the rail itself, in which case they could be renewed at each renewal of rails.

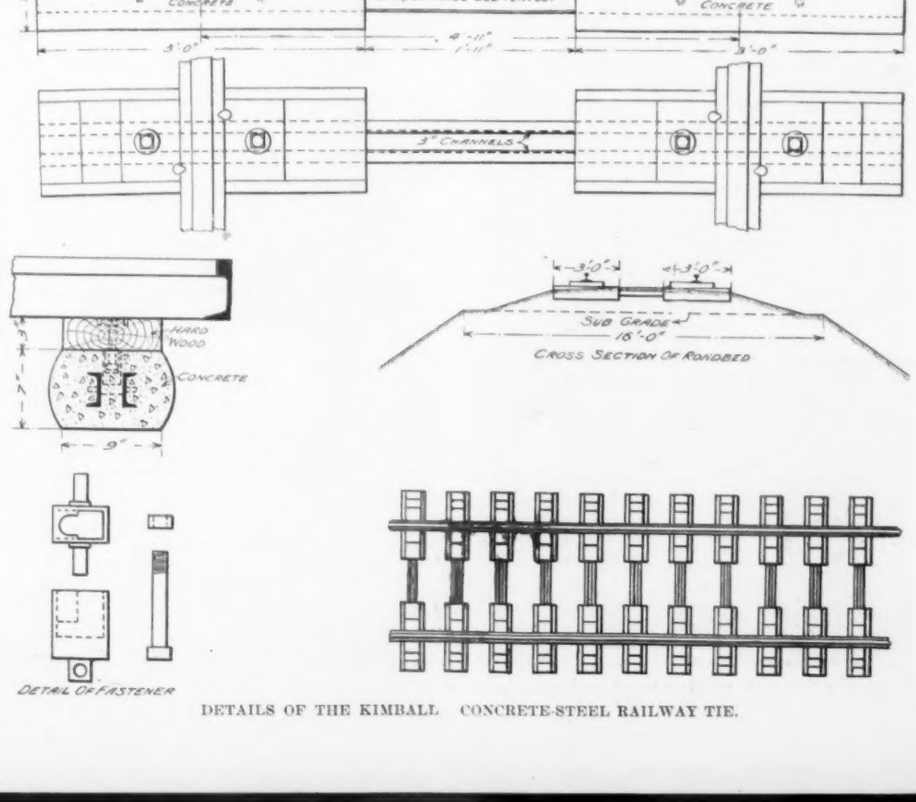
The cost of the tie when manufactured in large quantities is estimated at $1.30, separated into the following items: Iron and steel, $0.58; concrete, $0.50; hardwood blocks, $0.12; royalty, $0.10; total, $1.30. The total weight is 436 pounds. The tie is patented by George H. Kimball, consulting engineer, Detroit, Mich.

Concrete Barrels and Hollow Ware.

BISMARCK, N. D., April 5.—A. G. Peterson of Hankinson, who has been in the city for several days in the interest of his patent cement hollow ware, has interested several local business men in the project, and a company will probably be formed for the manufacture on a large scale of these goods. Mr. Peterson is the patentee of the process, and the sample barrel exhibited at the First National Bank corner has excited considerable interest. In this process all kinds of receptacles for liquid or solid substances are made out of reinforced concrete. Some years ago Mr. Peterson had a farm north of town, and is pleased that Bismarck people have interested themselves in the invention, as he desires to come back here to live.

McArthur Brothers Company, 11 Pine Street, New York City, were the lowest bidders for the construction of the concrete walls for the ship dock to be constructed in Black Rock harbor. Bids were opened by Col. Walter L. Fisk, United States Engineer for the Buffalo District, and all but one of these bidders came within the Government's estimate of $1,000,000 for the cost of the work.

The plant of the Trussed Steel Concrete Company at Youngstown, O., where large quantities of the materials used in every system of concrete construction are manufactured, will shortly be enlarged to provide for greater capacity demanded by the growth of the reinforced concrete industry. W. D. Forsythe, superintendent of the plant at Youngstown, says this is just one of several establishments devoted to the manufacture of concrete building materials and steel reinforcing that his company maintains in various parts of the country.



DETAILS OF THE KIMBALL CONCRETE-STEEL RAILWAY TIE.

Regulations to Govern Concrete in Philadelphia

PHILADELPHIA, March 25.—An interesting paper on Regulations of the Bureau of Building Inspection, in regard to the use of reinforced concrete, was read by Emile G. Perrot, a short time ago, at the meeting of the Engineers' Club. The conclusions arrived at in this matter are due to the work of a committee appointed by the president of the association, upon invitation of Edwin Clark, chief of the Bureau of Inspection, to assist him in formulating rules and regulations governing the use of reinforced concrete in the city of Philadelphia.

The members of the committee were Emile G. Perrot, chairman, Richard C. Develin, Charles Mills, Henry H. Quimby and Walter Loring Webb, who, in conjunction with Mr. Clark, held weekly meetings at the clubhouse, to which meetings representatives from the Philadelphia Underwriters and Mutual Insurance companies, having local representatives, were invited. Charles A. Hexamer served for the Philadelphia Fire Underwriters.

At these meetings all phases of design, use and regulation of reinforced concrete were thoroughly discussed. The laws adopted in the various countries and cities were investigated. After awaiting the development of the numerous tests that were being made by the United States Government and the various testing laboratories connected with the universities throughout the country, the committee drew up the final rules, which action was hastened on account of the unfortunate collapse last summer of the Bridgeman Building, Fifteenth Street and Washington Avenue, the committee realizing the importance of immediate action regarding the promulgation of definite rules, feeling that, as the construction became more general, inexperienced contractors were doing work which heretofore had been in the hands of experts. The committee state it was their care to make the rules as simple and as broad in their scope as possible, doing away with all the intricate formulas which it is customary to find in some of the foreign regulations, leaving it to the designer to use whichever formula best suits his training.

The codification of the rules was based on the building regulations of the National Board of Fire Underwriters and promulgated for adoption by the various cities throughout the United States, making such changes and modifications as the committee's experience and knowledge dictated, it being the intention of the Chief of the Bureau to adopt the form prescribed by the National Board of Fire Underwriters with a view to encourage uniformity in the regulations throughout the United States.

Some of the important features the committee advised to lay stress on in the new regulations are as follows:

"The adoption of a 1:2:4 mixture of concrete throughout, instead of the proportion of 1:2½:5, as had been in use heretofore. The reason of establishing this proportion was that the result of tests on full size columns at the Watertown arsenal in the year 1905 and 1906, and tests made by Professor Talbot at the University of Illinois showed a much lower carrying capacity for a lean mixture of concrete than had been anticipated; in fact, with the allowable unit stress at 500 pounds, a column with a 1:3:6 mixture would not have a factor of safety of four, as the ultimate strength on the specimens tested by the Government only average 1,524 pounds per square inch. But with a 1:2:4 mixture the strength of the column is increased approximately 50 per cent, so that a value of 500 pounds per square inch on the column gives a factor of safety of more than four, the ultimate strength averaging 2,288 pounds.

"It may be said, Why not make the columns a 1:2:4 mixture and the floors 1:2½:5 or 1:3:6 mixture? Anyone who has attempted to do it knows the difficulty of getting a column of 1:2:4 concrete continuous from the footings to the roof beams. The section of the floor connecting with the columns will necessarily have to be cast separately, and, if a different mixture is used in the floor, when the beams and slabs are cast, the concrete will flow into the column form, as it is necessary to stop the column when casting it at the bottom of the beam and allow it to settle before filling the beams. This will result in having a 1:2:4 mixture in the shaft of the column and a 1:2½:5 mixture at the floor level, so the column is no stronger than if it was a 1:2½:5 mixture throughout, which is the condition we desire to avoid."

The action of the frost on the concrete was taken into consideration, and it was decided "that a 1:2:4 mixture used in freezing weather would have a larger margin of safety for beams and floor slabs than 1:2½-5 or 1:3:6. The use of none but the best Portland cement, which would pass the accelerated test and meet the requirements as to tensile strength, was deemed of great moment, an average of the tensile strength recommended by the American Society of Testing Materials being adopted. The accelerated test is a little more severe than those requirements, it being considerd more important to have a sound cement than one very high in tensile strength, as the future of the building would be endangered by the use of unsound cement." The requirement for filing a report with the bureau of the test on each carload of cement was adopted as being the best means of insuring the use of none but the proper quality of cement.

To Make Concrete Lions.

WASHINGTON, D. C., March 25.—The proposal of the Erkins Company of New York to execute four lions in concrete and to place them upon the newels of the Connecticut Avenue bridge, for the sum of $4,000, has met with the approval of Commissioner Morrow and Capt. E. M. Markham, of the Engineers' Department of the District.

After a careful investigation, Commissioner Morrow says he found that only the Emerson Norris Company, of Boston, and the Erkins Company, of New York, were competent to do the work. The award is recommended to the latter as lowest bidder.

New Concrete Company Formed.

PORTLAND, ORE., March 29.—C. N. Sherman, president of the Blue Diamond Pressed Stone Company, 218-220 Abington Building, announces that his company has purchased from the Composite Pressed Brick Company its business interests at Sellwood, including its property. Mr. Sherman states that the present capacity of the plant for a full run of 22 hours is 44,000 brick.

The new enterprise has caused much interest in other Coast cities, and a representative of a syndicate about to erect a similar plant in Vancouver, B. C., is now in Portland inspecting the property of the Blue Diamond Pressed Brick Company, with a view of modeling their plant after the local one and getting other useful information. The officers of the company are: C. N. Sherman, president; B. B. Coyne, first vice-president; A. V. Fields, second vice-president; E. H. Stone, secretary, and W. D. Palmer, treasurer.

Concrete Firms Merge Business.

ROCKFORD, ILL., March 27.—Two enterprising concerns in this city were merged here yesterday when C. D. Corey connected himself with the Rockford Concrete Construction Company. Mr. Corey will take charge of the wet work of the consolidated concern and the combining of the two firms will mean not only an enlarged business, but a more complete organization. The new firm will use the Stevens process of making Roman stone and will give this branch of the business special attention. Mr. Corey is considered one of the best concrete workers in the West, having been engaged in the business in Rockford a number of years.

Build Concrete Factory.

STERLING, ILL., April 3.—Clyde Bowlsby and Jacob Dellinger have formed a partnership and secured possession of the Rock River Concrete Company, which operated last year on West Third Street. The firm has secured possession of the vacant space west of the European Hotel and will erect thereon a one-story fireproof building for the manufacture of concrete blocks. As soon as the weather permits the work of making concrete blocks will commence.

New Plant in New Mexico.

CLOVIS, N. M., April 3.—Work is progressing rapidly on the new cement block plant here, which is to be one of the most modern and well equipped concerns of the kind in this section. The plant when running will have a capacity of 500 blocks in a nine-hour day.

The night shift will work by electric light generated by the company's own plant. The main building will be 40 by 46 feet in size, with self-supporting roof, and two curing rooms 100 by 20 feet, with an alley between for the tracks from the work-room. Small tram cars will be used. The firm, which is known as Clifton & Merry, will use the Hercules double capacity machines, making blocks of any color or size. A unique "sample building" will be erected by the company in the shape of an office constructed of every variety of block turned out. The plant will be run to its full capacity from the start. In addition to their own steam the company will utilize the exhaust steam from the Craig Water, Light and Fuel Company in the curing rooms. The building will have all cement floors and will have a 150-foot track front on the Santa Fe Railroad.

Making Concrete Poles.

INDEPENDENCE, KAN., March 28.—The Independence Electric Company, at its power house, has a very interesting electric light pole made from Independence cement, rock and Arkansas River sand. This pole is a decided innovation, and if its strength is capable of withstanding the tests soon to be made should prove beyond all doubt to be the pole of the future. The pole in question was made eight days ago, and before being tested will have to season for about two weeks more. The pole is ten inches in diameter at the butt and tapers to six inches at the top, being square, with rounded corners, and is thirty-five feet long. Four steel reinforcing rods pass through the pole from end to end.

Concrete Posts Prove Successful.

SPRINGFIELD, ILL., April 10.—Fred R. Crane, instructor in farm mechanics at the University of Illinois, in his address to the Illinois Farmers' Institute at Peoria recently, gave some useful instruction in the work of making concrete fence posts. Among other things he said:

The greatest strain upon a post comes at right angles to the fence and not longitudinally with it, hence the post should be provided with its greatest power of resistance at right angles to the fence.

The fence post which is 6x6 inches at the base, and 4x3 inches at the top should be reinforced three-fourths of an inch from each corner, with a No. 9 steel wire. Sometimes a quarter-inch square rod, twisted, is used: this is stronger but is more expensive. A cubic yard of concrete will make 16 of these posts. This post is strong enough, and we can reduce the amount of concrete by making the post hollow in the center—the cavity three inches in diameter at the bottom and two inches in diameter at the top—and putting an inch face on each corner.

Chipping off the four corners saves material and makes very little difference in the strength. Twenty-one such posts can be made from a cubic yard of concrete. The material used in making the hollow posts will cost about 30 cents per post when using the 1:2:4 mixture, as recommended. These figures allow $1.75 per cubic yard for crushed rock, $1.50 for sand, $22 per barrel for Portland cement, and 8 cents per post for reinforcement of No. 9 steel wire.

Most of the methods of fastening fence wire to concrete posts are more or less unsatisfactory. To wire around the post is troublesome, and requires considerable extra wire; wire staples rust off and break in time; the casting with an enlarged head and expanded steel staple spring, which holds the wire, is fairly satisfactory, but expensive. A slotted opening to the hollow center of the post allows the easy use of spring steel staples for fastening the wire.

New Incorporations.

The Benson Cement Works, Benson, Neb. Capital, $20,000.

The Western Concrete Company, Louisville, Ky. Capital, $5,000. Incorporators: J. S. Brinkworth, E. P. Wulf and B. J. Jansing.

National Concrete Company, Butte City, Mont. Capital, $40,000. Incorporators: L. C. Alexander, J. I. Nichols and A. C. Kremer.

Calumet Concrete Construction Company, Chicago. Capital, $6,500. Incorporators: Benjamin Eefting, Cornelius N. Trompen and Gerrit Pon.

The National Concrete Company, Massillon, O. Capital, $10,000. Incorporators: Charles F. Snyder, H. W. Schape, T. G. Snyder and H. E. Sinnock.

Compound Stone Company, Jeffersonville, Ind. Capital, $5,000. Incorporators: H. F. Dilger, J. H. Warder and H. W. Newman. To manufacture cement blocks.

San Jose Concrete Company, San Jose, Cal. Capital, $10,000. Incorporators: Charles J. Wilkes, Arthur L. Dorn, Albert J. Seller, G. G. Garrett and DeLancy Lewis.

The Hydraulic Concrete Company, Marion, O. Capital, $10,000. Incorporators: H. C. King, Wm. L. Kenney, W. C. Kenney, Wertie A. King and Myrtle O. King.

Engineering and Concrete Construction Company, Hornell, Steuben County, N. Y. Capital, $25,000. Incorporators: J. L. Costello, T. A. Carr and P. D. Lewis, Brooklyn.

The Guarantee Building Block Company, Columbus, O. Capital, $5,000. Incorporators: W. W. Saunders, S. H. Hammel, J. L. Kavana, J. W. James and F. O. Snyder.

Wittell Brothers, Newark, N. J. Capital, $25,000. Incorporators: Andrew P. Wittell, Herman A. Wittell and William Fuss. The company is to manufacture concrete blocks.

Armstrong Concrete Specialty Company, Boston. Capital, $25,000. Incorporators: Mary E. Armstrong, George W. Armstrong, Arthur B. Cochran and Florence J. Armstrong.

Breese Artificial Stone Company, Breese, Ill., to manufacture concrete construction work. Capital, $6,000. Incorporators: John Holtkamp, Henry Dicker and John Beckmeyer.

Witt Concrete and Construction Company, Hornell, N. Y.; to manufacture cement, lime and bricks, general construction. Capital, $6,000. Incorporators: A. D. Witt, F. M. House, J. C. Smith, C. H. Witt, F. H. Salmen, Hornell, N. Y.

FROM OUR OWN CORRESPONDENTS

CHICAGO

CHICAGO, April 21.—While the manufacturers of building materials maintain an optimistic view of conditions for the year, there is no great amount of ready business. Building permits are more in evidence every day, however, and there are a large number of good-sized buildings on tap in the architects' offices. The principal building to be done this year is in apartment-house and smaller work, though factories and warehouses will show up in goodly numbers, perhaps in larger numbers than ever before in Chicago. The downtown district is now practically composed of new structures, and there will be little new work in the loop district for some time.

Two important downtown structures that will be commenced this year are the new La Salle Hotel and another fine large hotel on Michigan Avenue. These will be examples of the highest art in construction and will compare favorably with the leading hostelries of the country.

Prices of building materials have taken a slump, and they are lower in cost than ever before. Competition is as keen as ever, and the manufacturers are after every job that comes up.

The Crucible Steel Company have purchased a piece of property at 117 West Washington Street, 60 by 151, on which they will erect a building six stories high, to cover the entire area. It will cost between $75,000 and $100,000.

The Quaker Oats Company have purchased a piece of property at Lake Park Place and contemplate the erection of a warehouse.

A seven-story building 110 by 230 will be erected at the corner of Superior and Kingsbury Streets by J. E. Tilt. It will cost $150,000.

Spaulding, Merrick & Co., a large tobacco concern, will construct the concrete warehouse they had plans prepared for about a year ago. The architects are Nimmons & Fellows, Marquette Building.

Sprague, Warner & Co., wholesale grocers, have decided to extend the warehouse they recently constructed on Erie Street. They will make an addition 180 by 200 feet. It will be of reinforced concrete construction and cost $150,000. C. A. Eckstrom is the architect.

Architects Holabird & Roche have made a contract with the Cook County Commissioners to prepare plans for an infirmary. Details of construction have not been announced.

Eiger Bros. will construct a manufacturing plant at the corner of Jackson and Aberdeen Streets. It is to be 143 by 100 feet, eight stories high, and will cost $200,000.

The Furniture Exhibition Company will build another addition to their warehouse on Illinois Street. It will be five stories high, 500 by 120 feet. The cost will be $400,000.

Roberts & Oakes, packers, Forty Fifth Street and Center Avenue, will erect an addition to their plant, four stories, 98 by 120 feet, to cost $80,000.

The crushed stone plant being erected by the Riverside Stone Company at Riverside was badly damaged by fire of incendiary origin. The lime plant of this new concern, which is in operation, was not touched by the fire. The machinery was being set for the crushing plant, and the buildings were nearly completed. They expected to be crushing stone by May 1, but the fire, of course, upset their plans. While not all the machinery was destroyed, it was all damaged to a considerable extent.

One of the most disastrous fires that ever occurred in a crushing plant broke out in the Gary, Ill., plant of the Dolese & Shepherd Company on the night of April 16. This was the largest crushed stone plant in the West and had a capacity of 350 tons of crushed stone per hour. The entire plant was destroyed, with a loss of $50,000. It was recently equipped with a set of Superior rolls which crushed the screenings and smaller-sized stones into sand size to be used in concrete. This was an innovation, and a month's trial proved very successful. The rolls had an output of forty-five tons per hour. Another set was being installed and was to have operated the day the plant burned down. While plans have not as yet been fully decided on, the company will erect another plant doubling the former capacity. In all probability a No. 18 crusher will be installed, this being the largest size and able to take a 36-inch stone. The company have not been put out in their operations, as they have got their other plants into operation and are making their usual deliveries.

The use of crushing rolls in crushed-stone plants around Chicago has almost become universal. The demand for limestone screenings has grown rapidly and some engineers are specifying the limestone screenings for the aggregate in concrete. It will be but a short time when the gravel producers will also introduce the rolls for crushing the over-sized gravel. It was only a year ago when immense piles of screenings from the crusher plants were on the properties of the operators. These were not only unmarketable, but an expense to handle. Then the development of screenings for concrete aggregate came, and in a short time these piles disappeared; but the market had been created and the crusher operators had to supply the trade. Then followed the introduction of the rolls to make screenings, and the once despised product has proved to be the best dividend-payer the operators now have.

"The time is not very far distant when the crushed stone for concrete purposes will be washed by the crusher operators," said one of the fraternity. "Sand and gravel plants are equipped with washing devices to wash the sand and gravel free from loam and dirt. I have made concrete of stone that was first thoroughly washed years ago, and today it is absolutely impossible to break the concrete, though, if hammered hard enough, the stone will break. Washing removes the dust which settles on the stone in screening or while passing through the crusher. This dust forms a kind of film around the stone, and the cement cannot get as firm a bond or crystallization as it can on the cleaned stone. Crusher plants will be equipped in the future with washing devices to furnish this stone."

The Illinois Central Railroad has followed the footsteps of the C., B. & Q. and is casting concrete blocks for use on the subways where track elevations are made. These blocks are about 2'x12'x6', and are used instead of iron work, which has been the usual method of subway construction. The blocks are of reinforced concrete and have been found by the roads to be not only cheaper to make, but to make a better-appearing and more enduring subway. The retaining walls are also of concrete, and the blocks are laid in spans resting on the retaining wall and concrete piers in the middle. The concrete will also prevent leakage from rain and melting snow on the tracks and the dripping of oil and grease.

Michael Kiggins, of Hillsboro, Ill., is installing a complete No. 4 Austin Crushing plant. He will crush stone for ballast work to be used on the road of the Central Illinois Traction Company.

The Linwood Quarries Company of Davenport, Ia., are increasing their crushed stone plant by the addition of a No. 7½ crusher.

The State of Washington is the first of the Western States to take up good roads legislation. The Legislature recently passed laws which will allow money to be appropriated for the making of roads. Convict labor will be used, and plants for the crushing of stone will be installed and equipped. Samuel Hill, a nephew of J. J. Hill, and prominent in railroad and financial circles, is one of the moving spirits, and it is to a great extent the work he did that brought about the legislation.

Carter & Co. of Oklahoma City, Okla., are putting in a crushed stone plant at that place. The stone is to be crushed for railroad ballast work.

The Mantorville Stone Company of Mantorville, Minn., are installing a No. 4 Austin crushing plant at their quarry.

J. U. C. McDaniel, of the Chicago Portland Cement Company, takes an optimistic view of building and construction conditions for the coming year. Mr. McDaniel said that, though business was slow in materializing, he believed that the summer will see great activities.

The Garden City Sand Company announce that they will move on May 1 from their present location in the Security Building to the Chamber of Commerce. The demand for "Stonekote," their Portland cement exterior, is rapidly growing, and they are making shipments all over the country.

The Universal Portland Cement Company has taken the largest order for cement that has ever been placed with a single company. A contract has been made with the Corn Products Company for 175,000 barrels of Universal to be used in the construction of their plant and houses for employees at Summit, Ill. The delivery of the cement extends over a period of two years.

The Marquette Cement Manufacturing Company report that their mill is shipping to capacity. Besides the large orders they are shipping to dealers they are furnishing the cement for concrete street paving through the local dealers and the cement for the construction of the Great Lakes Naval Training Station at North Chicago, Ill.

The Princess Theater on Clark Street is a good example of construction for fireproofing buildings of this nature. It is reinforced concrete with terra cotta exterior. The walls are to be plastered with hard wall plaster manufactured by the United States Gypsum Company.

MINNEAPOLIS.

MINNEAPOLIS, MINN., April 17.—Building prospects continue to stand out better than might have been anticipated in view of the general attitude. The work in view is mostly of the small character, and the number of residences and small business structures which are planned and on which work has been started seems to be quite up to the volume of a year ago. But as yet the larger structures of the season are of public or semi-public character. Schoolhouses are exceptionally numerous, and the Collinwood horror is having a good effect in urging the need of having the exits accessible and not confusing. But the great bulk of work at present is of residence construction. The smaller cities and towns seem to have a better general assortment of work than do the larger cities of the Northwest, where doubtless the possibilities of labor troubles impel the prospective builders to hold off.

The Miracle Concrete Construction Company, Minneapolis, is a recent incorporation, the capitalization being $50,000. The incorporators are Orville U. Miracle, Ralph O. Miracle, Chester D. Russell and George H. Detloff.

Otto Neitge, a general contractor of Mankato, Minn., was elected president of the Council at the spring election, defeating J. B. Nelson, another well-known contractor.

The Russell Company, architects, of Minneapolis, have retired from active practice.

Glenn L. Saxton, architect, of Minneapolis, has returned from an extended trip on the Pacific Coast. He is enthusiastic that now is a most favorable time to build, on account of cheap materials and labor.

Harold Johnson, a prominent fireproof and hollow-tile dealer of Minneapolis, has returned from a tour of England and the continent.

The Northwestern Marble and Tile Company, of Minneapolis, is the new name of the concern formerly known as the Northwestern Mantel Company.

Irving D. Burgh, of Minneapolis, who has represented the Marquette Portland Cement Company in Minneapolis for some time past, died March 23, after a brief illness, of typhoid fever. Mr. Burgh was well known to the cement trade of the Northwest through his association with the business. His sudden death came as a severe shock to his friends. The interment was at Rock Island, Ill., his former home. A widow and two grown sons survive him.

The North Iowa Brick and Tile Company, of Mason City, Iowa, has established a Twin Cities agency in Minneapolis, in charge of H. S. Wellington, with offices in the Lumber Exchange.

The business of George J. Grant, the St. Paul general contractor, has been incorporated, the incorporators being George J. Grant, K. P. Grant and W. Grant. The capitalization is $150,000.

The Reynolds Granite Company, of St. Paul, has been incorporated recently by C. H. Reynolds, W. H. Ramsey, Jr., and others. The capital stock is $50,000.

A fire in room 624 Andrus Building, Minneapolis, recently demonstrated the value of hollow-tile fireproofing. The building has hollow fireproof walls and partitions, and the blaze was in consequence confined to the single room.

An important plant will be established at Hopkins, adjacent to Minneapolis, by the Red Wing Sewer Pipe Company of Red Wing, Minn. The plant is announced to be the finest sewer-pipe plant in America, and will cost $300,000 for site and buildings. The intention is to operate the plant the year round. The new plant is to be ready for use by December 1 of this year. The site is most favorably located, being adjacent to trackage on the Minneapolis and St. Louis Railway, which connects with the Illinois Central system; on the Chicago, Milwaukee and St. Paul, which connects with the parent plant at Red Wing, and on the Great Northern, which extends through the Northwest, to the Pacific Coast. The Red Wing Sewer Pipe Company is one of the leading concerns of the kind, and this step will go far toward advancing them still further. The capital stock will be increased to $900,000.

The Minneapolis Builders and Traders' Exchange has formally changed its title to the Minneapolis Builders' Exchange. The new quarters in the Warner Building will be ready for occupancy about May 1, and the first week is to see a housewarming party and the second week a party for the ladies.

Building permits for March show a falling away in the three principal cities of Minnesota, Minneapolis, St. Paul and Duluth. The former had $412,000 for the current year, against $684,735 for the month of March, 1907. St. Paul had $370,890, against $711,364, and Duluth had $135,000, against $259,000.

J. E. Pilgram was awarded the contract for the eight-room brick school building in the Kenwood district, Minneapolis, at $36,545. He was also awarded the contracts for the additions to the North and East high school building at $27,136 and $30,285, respectively.

Ark Lodge of Freemasons, Thirty-first Street and Nicollet Avenue, Minneapolis, proposes the erection of a new building at Thirty-first Street and First Avenue South, immediately in the rear of the present building. It will be two stories, 55x110, pressed brick and cut-stone construction. Cost, $25,000. A. L. Door, architect.

The Minneapolis Park Board will erect a reinforced concrete pavilion at Powderhorn Park, to have Spanish tile roof, 40x100.

Long & Long, architects, have plans for extensive alterations and remodeling to be done to the City Sash and Door Company's building at Fourth Street and Third Avenue South, Minneapolis, to cost $20,000.

Tentative plans have been prepared by Kees & Colburn, architects, for a handsome sixteen-story hotel building for Fourth Street and Nicollet Avenue, Minneapolis, to be erected some time during 1909, at a cost of perhaps $750,000.

Kees & Colburn, architects, Minneapolis, have prepared plans for a vaudeville theater building to be erected on Seventh Street, between Nicollet Avenue and Hennepin, for Charles H. Miles of Hibbing, Minn. Cost, about $125,000. A fireproof building is proposed.

F. E. Graves was awarded the contract for the Hamilton School in Minneapolis at $10,374, and R. J. Cheney & Co., the Pillsbury, at $9,836.

E. L. Masqueray, architect, St. Paul, has plans for a Catholic cathedral to be erected at Wichita, Kan., at a cost of $125,000. It will be of brick and cut stone. The same architect has plans for a brick and stone hospital for St. Francis Association of Wichita, to cost $15,000.

The J. & W. A. Elliott Company secured the general contract for the shop, warehouse and storage buildings for the Minneapolis Park Board, aggregating about $19,000.

George Hyser of Minneapolis is promoting a proposition for the erection of a handsome hotel bulding at First Avenue South running from Fifth to Sixth Streets. L. S. Buffington, architect, has prepared tentative plans for a twelve-story building, to cost, complete, about $1,500,000.

Ingemann Bros. were awarded the contract for a large wing addition to the City and County Hospital in St. Paul, at $103,800. Clarence H. Johnston, architect.

The Brack Construction Company of St. Louis is interested in a project for a handsome modern hotel building in St. Paul. Mark Fitzpatrick, architect, has prepared sketch plans for the work.

St. Paul is to erect four school buildings this summer to cost about $400,000.

The Postmaster of Minneapolis has been before a Congressional committee outlining the needs of the Minneapolis Postoffice, for which a site covering a city square has been purchased, but no appropriation has as yet been made for the building. The site is opposite the Chicago, Milwaukee and St. Paul Depot, and about three blocks from the Union Depot.

ST LOUIS.

ST. LOUIS, April 17.—The principal building operations of the near future in St. Louis will consist of large structures of a public or semi-public character, apartment-houses and dwellings. Very few office buildings, hotels or theaters are likely to be erected this year. There will, however, be some warehouses and factory buildings. A survey of the situation discloses a very encouraging outlook for contractors and building material interests. It is thought that some contractors have been delaying operations with a view to bringing about some modification in the ideas of the labor element on the matter of wages. During the past few years the various trades unions, through the activity in building and the corresponding demand for labor, have taken all possible advantage of the situation, but the change in conditions now gives the contractors an opportunity to assert themselves with a view to adjusting wages to meet the state of the times, and it is hoped that the decline in lumber and other building material, together with the ease in the money market and favorable crop prospects, will operate to induce capitalists to look favorably on real estate investments, with such improvements as promise reasonable returns and safe employment of their funds.

Ed Quebbeman of the Universal Portland Cement Company, Chemical Building, says that trade is quiet. There was, however, a very good demand early in the year for delivery in the spring, and in consequence their customers are stocked up. Prices are steady and are good until May 1, it being the policy to set monthly limits. The most important lack of demand this season has been with the railroads, which have not been in the market.

At the Iola Portland Cement Company, Bank of Commerce Building, they say that business is not as good this month thus far as was the case in March.

J. E. Conzelman of the Expanded Metal and Corrugated Bar Company of St. Louis, Frisco Building, says they are furnishing estimates for steel work on several important buildings.

The Meramec Portland Cement and Materials Company, Bank of Commerce Building, recently had fourteen carloads of lumber and materials delivered at Sherman, Mo., for the company's new plant at that point.

David A. Marks, president of the Continental Portland Cement Company, says that work is progressing satisfactorily on the company's new plant at Continental, St. Louis County, and it is expected the plant will be put in operation by August 1. J. L. Ballinger, a well-known engineer, is the general manager, and W. H. Hess is the chemist.

A six-story commercial building will be erected on the lot adjoining the new Maryland Hotel on Pine Street, west of Ninth, to cost $50,000.

It is reported that the Bell Telephone Company contemplates the erection of a new building on the corner of Tenth and Pine Streets.

A new corporation, to be known as the King's Highway Apartment Company, will erect in the near future an apartment-house that is to be far and away the handsomest ever built in St. Louis. It is to cost over $1,000,000. It will be twelve stories high, with a ground area of 375x156 feet, and will occupy the southeast corner of King's Highway and Laclede Avenue. The apartments will be from eight to ten rooms each.

It is expected that the office structure as planned by Architect Henry F. Roach for the La Salle Investment Company will soon be started on the lot at the corner of Olive and Broadway. It will be nineteen stories high and will cost in the neighborhood of $600,000. The lot is 100x28 feet.

There will be an addition to the time-honored Shaw mansion at Shaw's Garden which is a part of a great arcitectural plan involving an expense of $500,000. The new building, which will complete one side of a quadrangle, will cost upwards of $50,000. It will be constructed with especial pains in the matter of rendering it fireproof, on account of the valuable library and museum to which it will be devoted. Mauran, Russell & Garden are the architects. Excavations for the foundation are now being made.

It is reported that the half block embracing the Equitable Building, at the corner of Sixth and Locust Streets, will be improved with a skyscraper devoted to offices and a department store. This will involve the removal of the Equitable Building, one of the earlier office structures of the city.

The exploitation of the 28-story Buyers' Club Building is being energetically pushed by the new State Trust Company, one of the strong banking institutions of St. Louis. The plan of the company for establishing a headquarters for buyers is very generally commended.

Building Commissioner Smith has inspected the plans and specifications for the new Coliseum building. The commissioner drew especial attention to the necessity of providing ample exits and fire safety appliances. The plans were prepared by F. C. Bonsack and Isaac S. Taylor, architects. The C. L. Gray Construction Company will superintend the work of construction. In addition to the Coliseum, the building will contain seventeen stores fronting on Washington and Jefferson Avenues. The structure will cost $260,000. The Coliseum will be one of the largest and most complete of any in the country.

The Central Building of the Public Library, for which a contract will be let in the late spring or early summer, will be a two-story-and-basement structure, in a neo-classic style, erected in the midst of a park or garden formation on the southern half of the site at Olive and Thirteenth Streets. The front of the building will be 95 feet back from Olive Street and the sides 50 feet from Thirteenth Street. The building will be 240x180 feet. The entire area is about 6,000 square feet. The structure will cost $1,250,000.

Granite as the proper structure for the new St. Louis Cathedral has been decided upon by the special committee having the matter in charge. This will involve the re-submission of the bids on the part of the twenty-two contractors who have made estimates. All of these bids took Bedford stone into consideration, in whole or in part, for the structure. Granite in the ornamentation alone will make the cost of the cathedral $300,000 more. The total cost of the new edifice will be in the neighborhood of $2,000,000.

Among the new public buildings to be erected by the city of St. Louis are a new insane asylum, to cost $1,000,000; the negro high school building, $750,000; City Hospital extension, $800,000, and a new high school building, to cost $650,000.

THE WEST COAST.

SAN FRANCISCO, CAL., April 16.—Work will soon be commenced on a six-story steel and reinforced concrete building for Frank Maskey, the candy manufacturer, at 28 Kearny Street. Havens & Toepke are the architects.

J. J. Leonard, the contractor, has run the walls of the reinforced concrete Rapp Building up to the level of the fourth floor. This substantial structure is situated on the northeast corner of Second and Minna Streets.

Work is temporarily suspended on the interior finishing of the Valencia Street Theater, on Valencia Street between Thirteenth and Fourteenth. The walls of this fine reinforced concrete structure have been completed.

About $100,000 will be expended on new reinforced concrete buildings on the site of the old California market on the block bounded by Pine, California, Montgomery and Kearney Streets. The main building will be one story in height, covering a large ground site, and there will be two smaller buildings of two stories each.

Plans have been completed and work will soon be commenced on a $50,000 reinforced concrete building on the site of the famous Cliff House, which was destroyed by fire last year.

The Clarke Construction Company have erected three stories of a reinforced concrete building covering a site 65x100 feet on the northeast corner of Geary and Stockton Streets, which will be occupied by Wolfe & Hawley.

The Thompson-Starrett Company have erected four stories of a very substantial reinforced concrete building on the southwest corner of Sixth and Market Streets. It covers a site about 50x120 feet.

SAN FRANCISCO, April 18.—The construction of buildings is going ahead at a rapid rate notwithstanding the tightness of money. It is still difficult to secure large loans, but the prospects for securing funds from the East are improving. Two of the large life insurance companies are making arrangements for placing several millions each in San Francisco building loans, and other financial institutions are expected to follow their example. The Royal Insurance Company will proceed at once with the erection of its 10-story steel frame fireproof office building on the corner of Pine and Sansome Streets. The steel is being shipped from the East. Concrete foundations are being laid, and reinforced concrete floors, of approved design, are provided for in the plans. The clear weather which has prevailed for a month has facilitated the laying of concrete walks and a variety of other concrete and cement work. An increased demand for reinforced concrete buildings is noticed, especially in the interior cities of California. A fair beginning has also been made in reinforced concrete construction in some of the principal cities of the State of Washington.

The San Francisco building permits for the month of March showed a total valuation of more than $2,000,000. A great many concrete floors have been laid in stables in accordance with the new city ordinance.

Cement, both domestic and foreign, is still comparatively low in price, and stocks of European Portland cement are ample for all requirements for some time to come. Alsen cement is still quoted at $3 a barrel, with other foreign brands in proportion.

The manufacturing of cement in California shows a larger production than earlier in the year. More plants are in operation, with increased outputs.

Several new cement mills are still in course of construction in California. The Henry Cowell Cement Company's plant at Concord will be rushed to completion, although there has been some delay in the past. The contract for electric power for the operation of the machinery of the big plant was signed some time ago, and special arrangements have been made by the Great Western Power Company so that the current will be supplied without fail as soon as the mill is ready for operation.

Arrivals of foreign cement by sea have been very

light during the past month. A shipment of 7,669 casks of Portland cement arrived from Antwerp March 21, and a shipment of 22,412 from the same part March 14.

Frank Maskey, the candy manufacturer, has applied for a permit for the erection of a steel frame and reinforced concrete building of six stories and basement, to cost $125,000 and to be located at 28 Hearny Street. The structure will be used for stores and offices.

Paul O. Drinkwitz, Coast manager for the Thomas system of concrete construction, who recently arrived from Joliet, Ill., has located in Berkeley, Cal., and will endeavor to work up trade on a large scale. The company which Drinkwitz represents manufactures rockface blocks for the construction of residences, stables, porches and business blocks, and also makes interior tiling for bathrooms and kitchens.

A design for a cylindrical concrete pile to be used in the construction of piers and wharves on the water front has been submitted to the Harbor Commissioners by Col. W. H. Heuer and Luther Wagoner, which it is claimed has a greater bearing power than the pile at present used, and may be constructed at a saving of $100 for each pile. The plans for the complete development of the water front with wharves and docks from the Presidio to the San Mateo County line, as prepared by these engineers, to be submitted to the Federated Harbor Improvement Association, call for the use ultimately of 100,000 piles supporting wharves. Consequently it is claimed that this new design will result eventually in a saving to the port of $10,000,000. The concrete cylinder which has been used for the last few years in dock construction here is one on which Howard C. Holmes holds a patent, and from the use of which he derives a royalty. No patent has been applied for on the new cylinder, and it is not the intention of the inventors to seek any royalty.

The Santa Cruz Portland Cement Company's big plant at Davenport, Cal., is still a little short on oil, and only one side of the mill has been run for several weeks. Superintendent Davis states that, in spite of this fact, his company is shipping from fifteen to twenty cars of cement every day, and as soon as enough fuel oil is received from the Coalinga field the output will be doubled.

Sealed proposals for furnishing cement will be received at the United States engineer's office, Honolulu, and at the United States engineer's office, 1840 Polk Street, San Francisco, until 12 noon, April 30. Information furnished by C. W. Otwell, captain of engineers.

Articles of incorporation for the Victor Portland Cement Company have been filed in San Bernardino County, California. The capital stock is $3,200,000, and the plant is to be installed in Victorville. The quarries from which cement will be manufactured are located eight miles northeast of Victor, and a part of the plan of the corporation is the building of a broad-gauge railway to cover this eight miles for the purpose of hauling rock to the mill. The capacity of the plant will be 3,000 barrels per day, which is on a basis of about 900,000 barrels per annum. Electric power, developed from steam, will be used to run all machinery, and also probably to operate the railway from the quarry to the mill. It is stated that the company will issue bonds to the extent of $1,500,000 with which to build and equip the plant. It is understood that the company has secured immense water rights in the Mojave River, and the idea is current that the corporation has some connection with the Victor reservoir project. The corporators are L. Blankenhorn of Pasadena, Aman Moore, J. A. Schuyler, F. T. Griffith of Los Angeles, and others.

Advices from San Bernardino, Cal., say that the Golden State Cement Company is preparing to install a cement plant at Oro Grande, on the desert, which will turn out 1,000 barrels of cement per day.

A representative of the Northwestern Portland Cement Company of San Francisco states that machinery has been purchased for the cement factory to be built at Kendall, and as soon as the weather is favorable construction will begin. The initial capacity of the plant will be 5,000 barrels a day. The plant will be patterned after a Pennsylvania factory.

Advices from Pendleton, Ore., are to the effect that within thirty days work will be commenced on the installation of a big cement plant at Lime Point, two miles above the mouth of Snake River. Negotiations for the machinery have been in progress for some days, and it is reported that the deal was closed recently. The initial plant will have a capacity of 500 barrels daily, which will be increased to 1,000. The plant is to be installed by the West Coast Portland Cement Company, composed of Seattle capitalists.

Superintendent Rogers of the Vulcan Rock Company says that at the present time there are only about fifty men employed in getting out rock. He expects to have at least 100 men at work soon, as the demand for the work for concrete in San Francisco is increasing. Under the new regime the company has been placed on a paying basis.

A fine specimen of a reinforced concrete bridge is nearing completion at Santa Cruz, Cal., spanning the San Lorenzo River on Water Street. The 40-foot segments of the big arches, which were shaped in wood forms and weighing many tons, have all been hoisted into position and dropped into their metal sockets. As a consequence of the success with which this work has been accomplished Engineer Thomas is greatly elated, for it demonstrates that the principles which he has brought into play in bridge construction are not only feasible but are so much superior to those which have heretofore been utilized that they must eventually prevail in all the big cement bridge structures of the future. After all these arches are placed the rest of the work will be comparatively easy, as the heaviest of the segments will have been put in position. The general contour of the partially completed structure shows that it will be a graceful and beautiful piece of bridge work.

Thomas E. Morgan has had a number of experts inspecting his holdings near Green Valley, Cal. They all agree that the asbestos is of a high grade. Mr. Morgan is endeavoring to establish a factory at Sacramento. He has been interested for some time in a factory in Oakland which has used a quantity of his asbestos.

Deposits of asbestos have been found in Plumas County near the Western Pacific Railway's Spring Garden tunnel in Northern, Cal., and only a quarter of a mile from the railway. The asbestos is of excellent quality, the fiber being six inches long.

Advices from Nogales, Ariz., state that the Sonora Railroad has arranged to build a spur from the Alamos branch to a great deposit of limestone near Victoria Station.

INDIANAPOLIS.

INDIANAPOLIS, IND., April 20.—Spring building is opening up at an amazing rate, and those who predicted there would be little activity in that line this year are much surprised. In March the amount of building was 52 per cent greater than in March, 1907, and cement dealers and workers are coming in for their share of the business. Cement prices are steadier than they have been for months, and cement mills are practically all working with full forces.

The Merchants' National Bank has just installed a new safety deposit vault of much interest to concrete contractors. It was built by the York Safe and Lock Company, York, Pa., and the construction was superintended by E. A. Strauss, with E. H. Burnham & Co., Chicago, who also designed it. The vault is 30 feet long, 9 feet wide and 9 feet high, and the walls are of concrete and steel 3 feet thick.

The Board of State Charities in this city has approved plans for the construction of a $60,000 jail building to be erected at Crown Point, and the Lake County Auditor in that city will soon ask bids for its construction. This will be the first jail in the State to have concrete partitions between the cells, the partitions to be 6 inches thick.

The Hackedorn Contracting Company, on East Ohio Street, has been awarded contracts for the construction of three large concrete arch bridges in Franklin County, near Brookville.

The Fisher Automobile Company, one of the first concerns of its kind in the city, is to have a new garage, to be built at a cost of $30,000. It will be built by the Mansfield Engineering Company, Terminal Traction Building, this city, and will be three stories high.

A. Von Spreckleson of this city has had his bid for the construction of the new Y. W. C. A. building in this city accepted. It will be of reinforced concrete and will cost about $80,000.

There was an explosion and fire in the dynamite house of the Lehigh Portland Cement Company at Mitchell a few days ago. About 1,600 pounds of dynamite exploded and the workmen fled to the hills. The engine-room and air-compressors of the plant were wrecked, and it was some days before work at the plant could be resumed. Nobody was injured.

R. Kirshbaum is preparing to build a seven-story structure at Capitol Avenue and Washington Street to occupy the site of the old Masonic Temple. He proposes to erect a building especially suitable for the use of manufacturers' agents, and it will probably be of reinforced concrete construction. Contracts have not yet been awarded.

J. W. Shock, C. B. Williams and Charles A. Butler have organized the J. W. Shock Company at Huntington with a capital stock of $15,000. They will manufacture concrete blocks and other cement products and do a general concrete contracting business.

Foreigners employed by the Sandusky Portland Cement Company at Syracuse have fled because of ill-feeling between themselves and American employees.

LOUISVILLE.

LOUISVILLE, KY., April 18.—Unless present indications for business do not materialize there will be a very fair year in this locality as regards the building industry, and that there will be at least a fair amount of concrete work done here is also an assured fact, despite the early discouraging aspect on account of the financial conditions.

Aside from the sewer work, which is consuming considerable concrete, there are other works in progress that will help to give some of the operators something to do to keep them engaged. The State Fair buildings are to be erected of concrete, and work will be started on these next month. Albert S. Joseph has been selected as the architect, and O. G. Joseph will be the engineer in charge. The style of the buildings will be of the Spanish Mission type, concrete, with red tile floors.

The Fourth Avenue Presbyterian Church has had plans drawn by Architects Gray and Hawes for the erection of a chapel adjoining the church. The building will cost $30,000, and will be erected of cut stone and brick, but there will also be a very large percentage of concrete in its construction, as it will be modern in every respect and as nearly fireproof as possible.

Hill & Gayle of Fulton, Ky., have been awarded the contract for the concrete foundation of the new Carnegie library at Hickman, Ky.

There is a rumor current to the effect that there will be a Portland cement plant established in Grayson County, Ky., near Leitchfield. It is said that the plant will cost at least a million dollars.

Butler & Dolfinger have opened a cement testing laboratory at No. 177 Fourth Avenue, where they have installed the latest and most complete facilities. Mr. Butler is an engineer of many years' experience, and has long devoted his attention to this particular branch of the business.

The Globe Concrete Company, one of the newest concerns in this line here, have opened an office at 167 Fourth Avenue, and are going to devote their attention to all kinds of concrete work. The managers are experienced concrete men. They are in the market for some concrete block machines.

O. G. Joseph has opened a laboratory for testing cement in the Lincoln Bank Building.

The Central Concrete Construction Company are getting things in shape for an active year. They are operating their plant on full time.

The National Concrete Construction Company find conditions encouraging. They have completed work on the Haldeman warehouse, and are making considerable progress on the Bourbon stock yards. They are also figuring on considerable other work.

The Southern Roofing and Paving Company say that they will soon begin work on their concrete contracts, and that they have only been held back on account of the rain. They are doing something in roofing, also, and are well pleased with conditions.

The Louisville Pressed Stone Company are not actively engaged in concrete work now, but will begin within a short time.

The National Roofing and Supply Company are busy on concrete and roofing, also. They believe that there will be a very fair year in both lines.

The Kosmos Portland Cement Company are selling considerable more cement than they have been. They had to close down their plant for a short time on account of high water. They have not been damaged, however, and were simply forced to suspend operations until conditions improved in this respect. The report about their fire several weeks ago was greatly overdrawn, as the damage was very small.

J. B. Speed & Co. will operate their new addition at the Speeds, Ind., Portland cement plant within a few days, as everything has been put in readiness. They say that the demand for Portland cement and lime has been increasing all the time within the past month.

The Utica Lime Company find conditions improving right along. They say that the demand for lime, cement, firebrick and other commodities has shown an improvement that promises well for the coming months.

The Louisville Cement Company say that the call for Portland cement is steadily improving, and that they are well pleased over the indications for the coming months.

The Ohio Falls Sand and Gravel Company has been incorporated with a capital stock of $15,000. Those interested are: Annie Levering, 100 shares; Ben Humpich, 100; Henry L. Kremer, 95, and Charles Kremer, 5. The limit of debt is $5,000.

The Ohio River Sand Company say that the demand for sand has not been as brisk as they would like to see it, but that they are doing something all the time. The high river has not marterially interfered with their operations as yet.

The Atlas Wall Plaster Company find conditions improving all the time, and they say that they hope

for a very fair business. They are improving their plant from time to time.

The Kentucky Wall Plaster Company are operating both their mills. They are satisfied with the demand at this time, and believe that there will be ample business.

Samuel F. Troxell & Co. are keeping busy on roofing jobs and are well pleased with the outlook for the future in their line.

NEW ORLEANS.

NEW ORLEANS, LA., April 18.—Every age has its own peculiar styles of architecture, and certain building materials predominate. Among the ancients there was a solidity and lasting quality that has not appeared until this good day unless the concrete construction of today may be the turn in the cycle to bring back the days prior to the Christian era. It is safe to say that there is not a building erected in New Orleans today that has not concrete or cement in one form or another. The diminutive outbuilding has a foundation of concrete blocks, because they are cheaper than the brick pillars and require no skill other than a carpenter with a level to tell when they are all the same height.

When concrete was first proposed here there was not an architect who took kindly to it. It was untried in modern buildings, and they were chary of departing from the old ways. Yet today it is safe to say that there is not an architect in town who does not favor concrete in some form.

Possibly the most enthusiastic firm is that of MacKenzie & Biggs. Mr. Biggs is even thinking seriously of concrete boats. He has a head full of concrete ideas that he keeps working out from time to time to good effect. The first monolith building in the city may be credited to his genius in this line.

When Mr. MacKenzie was asked for an expression relative to concrete for building purposes he said emphatically: "It is the only material for this city, considering the soil and the load it will carry. I am not in favor of concrete blocks, but reinforced concrete. We use it whenever we are allowed to and whenever we can persuade a customer to use it. We recommend the concrete piles instead of the wooden piles. Unless the wooden piles are driven below the water line they will decay and are useless. The water level is being lowered right along by the underground sewerage and drainage. I prefer the Raymond concrete pile. Where the load is not over the carrying capacity of the soil here we recommend a concrete float foundation. That is where the concrete is spread over the entire lot." Speaking of concrete piles, Mr. Biggs favors the jetty pile. It is a concrete pile molded before it is sunk into the earth. This he claims is equal to any pile there is.

MacKenzie & Biggs have just let the contract for the erection of a three-story apartment-house. The ground plan is 54x100 feet, and it is to be constructed of reinforced concrete throughout—walls, beams, girders, floors, all of reinforced concrete. The same architects have awarded the contract for the building of a six-story office building, to be of reinforced concrete throughout, to O. Walther. They are also preparing plans for a reinforced concrete elevator of 200,000 bushels capacity and a concrete warehouse of 10,000 bushels capacity for H. T. Lawler & Co. This firm had a flouring mill erected of reinforced concrete some time ago and found it most satisfactory.

Mr. Toledano, of Toledano & Wogan, one of the oldest firms of architects in the city, was asked concerning the use of concrete in architectural work. He also favors concrete for floors and foundations and for the fireproofing, but for general construction he prefers steel construction. In the Grunwald Hotel, lately completed, and in the Monteleon Hotel, which this firm also designed and is superintending, the construction is of steel construction with concrete foundation. All the beams are in concrete, and the floors are all of reinforced concrete.

It is evident from the buildings under construction and those that are being bid upon that all the architects here and those away from here whose designs have been accepted realize that concrete is growing more and more in favor.

Said Mr. MacKenzie: "If for no other reason, the city should now pass an ordinance that all the houses in the fire limits should be of concrete, because with the new clear water that we are to have we will have a fire some day that will put Chelsea in the shade. The reason we have such good fire protection now and that the firemen put up such heroic fights is because the water is so muddy that when it is thrown on the fire the mud smothers out the fire, as clear water can never do."

It would seem with all the concrete work in building and paving that a greater quantity of sand and gravel would be used than when the construction was of brick and stone, but such, it seems, is not the case. At least Walter F. Jahncke, secretary and treasurer of the Jahncke Navigation Company, who handle sand, gravel and shells and do a general contracting business, says that there is no more of these materials used now than formerly. This is one of the oldest sand and gravel and shell firms in the city. Their equipment is most excellent. They have their own dredges, barges, tugs and all the appliances for getting good river sand and lake sand and gravel. pany, who have to depend upon the railroads for their material for the most part. In this line they are having some difficulty, for the reason that the railway freight rates are so high that it is not profitable. A fine gravel and sand bank was opened near Hattiesburg, Miss., from which this company secured several shipments of gravel, but the freight line comes in and sidetracks all plans for profit.

The Carolina Portland Cement Company, H. Ball Bowers manager, is one of the busiest firms in the city. This is an old established company in the handling of building materials. The first cement handled was an imported product, but now it is of American manufacture. The cement to be used in the erection of the Audubon Hotel will be furnished exclusively by this company and some 25,000 barrels will be used. The contract was awarded the Carolina Portland Cement Company by the Ferro-Concrete Construction Company. The company also has the contract to furnish the cement used in the construction of the water purification plant, Black & Laird contractors. Some 80,000 barrels have already been delivered, and 125,000 more are to be delivered.

The Carolina Portland Cement Company is well prepared to handle large contracts like these because of their excellent warehouse facilities and equipment. It should be very gratifying to the citizens of New Orleans to know that such contracts can be handled successfully by a local firm and to the contractors to know that they do not have to go outside the city for their building supplies. The phenomenal success of this company may be attributed to the fact that the very best materials are handled in each of the several lines, and to the ability of the company to make prompt delivery regardless of the size of the contract.

The United States engineers who have charge of the levee work are making tests of concrete for protection of the levees. It has been decided to try as an experiment a concrete jacket extending from the top or near the top of the levee to the top of the slope. The proportions of the concrete are one of cement, five of sand and eight of gravel. Clinton wire fabric 6x6-inch mesh is used. A full description will follow in another article.

MEMPHIS AND THE SOUTHWEST.

MEMPHIS, TENN., April 18.—Building in Memphis last month exceeded the records for the corresponding month in 1907. Jobbers and manufacturers of builders' supplies hold more optimistic views here now than they have any time during the present year. The season is favorable and contractors are going right ahead on many jobs, while the architects are planning others.

The Fischer Lime and Cement Company, on Adams Avenue, are doing a world of business on all the building supplies they handle. They find a steady improvement in trade with the advance of spring.

F. A. Fischer, who recently returned from California, has taken a position with the Fischer Lime and Cement Company and will work in the local territory.

Manager Fraser of the Cubbins Lime and Cement Company in North Memphis has been getting a chain of warehouses into commission during the early months of the year. He is finding a good business on Speed cement and is also selling quite an amount of lime and tile.

The Union Sand and Material Company, Tennessee Trust Building, report that the April sand trade is picking up. They are working on the river and have yards at Memphis and St. Louis. They supply the building trade for miles around Memphis.

The big department store building of Bry & Co., to stand at the corner of North Main and Jefferson Avenue, is one of the big jobs of the season. The million-dollar Courthouse is about half completed. Several concrete warehouses are in prospect here. Among the reinforced concrete jobs of last season to which Memphians point with pride are the warehouses of the Memphis Cotton Warehouse Company in South Memphis, the plant of the American Bag Company in South Memphis and the hardware warehouse of the Benedict-Warren Company on Calhoun Street.

H. W. Brennan, with office in the Southern Express Building, is now representing at Memphis the Newsom Crushed Stone and Quarry Company of Nashville. This enterprising Middle Tennessee concern sells machine and concrete stone over a wide area of Tennessee. They now have at Nashville the contracts for four handsome residences.

The Memphis public schools recently erected, and other municipal work done by the city, have called for large amounts of building material, and most of this was furnished by the Memphis firms, who are as enterprising as any in the South.

H. A. Kingsley of the Kansas Stronolith Company contemplates putting in a plant at Garden City, Kan., for the manufacture of stronolith, a material used for paving, sidewalks, etc.

John and Conrad Herter have started a cement block factory at Clay Center, Kan.

The Springfield Cement Vault Company has been incorporated at Springfield, Mo., with a capital stock of $8,000.

The Southern Bitulithic Company of Birmingham, Ala., are working on a large street paving job at Decatur, Ala.

Ramsey & Davis of Portland, Ind., on competitive bidding with sixteen others, were awarded the contract for five miles of concrete paving at Fayetteville, Tenn.

CLEVELAND AND NORTHERN OHIO.

CLEVELAND, O., April 17.—There has been a distinct improvement noted during the last month in the tone of the building situation. While it is said on some sides that building has fallen off 50 per cent over the corresponding time last year, still it is admitted everywhere that conditions are improving more rapidly than was indicated about the first of the year.

The principal factor in holding back building operations are the banks. They are begrudging every dollar they are loaning for building this spring. It is about as hard to pry a loan out of a Cleveland bank as it is to hurl a paving-brick through a wedding ring. It is believed that the banks have money, but they are afraid to part with it. Until they relinquish their strangle hold on the people's currency building is bound to suffer. Efforts are being made on all sides, however, to stimulate the situation, and things may materially improve before the season gets in full swing.

A new concrete and brick church is to be built for St. Marian's parish on Woodhill Road, the pastor of which is Rev. A. Idone. The contract has been awarded to the Carey Construction Company of this city and work will begin at once. It is hoped that the structure will be ready for use early next fall. The building is to have a seating capacity of 600 persons and will cost over $21,000. The structural work and floors will be of reinforced concrete, the walls of brick, with trimmings in stone.

Cleveland is also to have another new concrete church in the same section of the city, but it is to be of block and for a different denomination. The First German Baptist Church will erect a new building on Kinsman Road, corner of Griswold Road. The contract for the foundation and the stone trimmings has been let to the Cuyahoga Concrete Stone Company. Work has been started on the foundation.

Two large concrete block buildings will be erected for the American Case and Register Company at Salem, O. The blocks will be supplied by the Cuyahoga Concrete Block Company of this city. One factory building will be one story high, 500 feet long and 200 feet wide. An office building will be three stories high and 100 feet square. The plans for the plant were prepared by Architects Chapman & Chapman of Cleveland.

The county is busy getting bids on a number of new concrete bridges to be erected. The latest is over Euclid Creek on St. Clair Avenue. Bids will be accepted for this bridge on May 6. A number of similar structures have already been begun in various parts of the county.

The county has for the first time in its history determined to test out cement curb. An unusually large amount of paving is to be done this year, and a considerable stretch of the cement curb will be laid. The County Engineer has made more strict some of the restrictions concerning the concrete bed under the brick pavement.

One of the biggest contracts which the county let has been for the paving of the Cleveland-Wooster turnpike. This went to Baldwin Bros. & Graham. It amounts to $82,000. It runs through three townships and is simply a part of a general scheme to improve all the county roads with brick pavements.

The Cleveland Automobile Club will this summer lay a three-mile stretch of sample pavement on Euclid Avenue, from Euclid Village to the county line, at a cost of $40,000, to demonstrate the value of good roads. It will be of stone with a rock base and is intended to be a model of its kind.

Contracts for over one hundred streets to be paved with brick and stone this summer have been let by the Board of Public Service. Double that number are to be cared for this season. Bids were found to be conunder way, and many of the contracts will be considerably lower than a year ago. Paving is now well

pleted before midsummer. A number for which money was provided a year ago, but which were not completed, have been begun this year and will be finished within a month or six weeks.

Work is humming along on the new Technical High School, which is being erected at a cost of $400,000. Large quantities of cement are being used, the job providing one of the best contracts of the year. The building will have one of the most magnificent entrances in Cleveland, it alone costing $60,000. It consists of twenty granite steps, with a façade of maroon terra cotta and entry walls of brick. It will be ready for occupancy October 1.

Andrew Ball & Son, contractors on the new Courthouse, have let several large orders for Lehigh Portland cement since spring opened up, work being under full swing on the big $4,000,000 building. A new superintendent has decided that LeFarge cement, imported from France, is not strong enough for much of the work and has barred its use. It was intended to use about $20,000 worth of the imported cement on account of its non-staining qualities.

The cement market in Cleveland is showing more strength during the past month than it has any time since last fall, when the panic struck the country and paralyzed the building industry. While prices are by no means soaring, they are slowly but surely improving. Portland cement is now selling around $1.60, according to the size of the order. Slags are ranging between $1 and $1.20, while naturals hover around the 75c and 80c mark. The supply is quite large, as the dealers have been stocking up on the presumption that building will be lively this summer.

Navigation having reopened, the fleet of nine vessels of the Kelley Island Lime and Transport Company are again busy plying between this city and the island. It is not believed that the threatened strike of lake seamen will affect the concern's fleet of vessels.

The face-brick makers of Ohio have formed the Ohio Face-Brick Manufacturers' Association and have elected William H. Hunt of Cleveland president. A three-cornered fight is being waged between the paving, fire and face-brick makers over the question of freight rates, precipitated a year ago by the complaint of the Stowe-Fuller Company of Cleveland against the rate charged by railroads on fire-brick. The face-brick makers resent the suggestion of the paving-brick makers that bricks be classed as packed and unpacked and declare that they should not be charged a higher rate simply because they put straw between their bricks to protect them. The face-brick makers declare that they will take the matter up with the Interstate Commerce Commission and seek a fair adjustment of rates.

New buildings for the city farm are springing into existence. They are after the Mission style of architecture and are of concrete, faced with brick. Sections will be plastered with a marble finish. The buildings are unique in many ways and are entirely fireproof.

An effort is being made to unionize cement and concrete workers in Cleveland. This is the second within a year. It is claimed that the cement and concrete workers are the only workers in the building industry who labor more than eight hours a day. With the growing importance of cement and concrete construction it is felt that this will become an important field, and labor leaders realize that it would prove a good thing to have a union here. There is some doubt, however, as to the ultimate success of the movement.

The United States Candy Company of this city is to have a handsome new $60,000 fireproof sanitary candy factory erected on Woodland Avenue. The Vorce Engineering Company have prepared the plans for the building. The general contract has been let to Crowell & Sherman. The building will be four stories high, with a frontage of 60 feet and a depth of 150 feet.

The officers of the Cleveland Builders' Exchange have been asked to assist in the launching of a new exchange at Dayton, O. The movement at Dayton was inspired by the organization of an exchange at Springfield, O., toward which the Cleveland exchange offered much assistance. This will be another link in the chain of such exchanges throughout Ohio, organizations which wield a powerful influence in the building industry.

BUFFALO, N. Y.

BUFFALO, N. Y., April 17.—"Reinforced Concrete" was the subject of an interesting address delivered in Buffalo recently before the Engineers' Society of Western New York by E. Lee Heidenreich, M. E., C. E. He said in part: "It has been realized that reinforced concrete, when properly constructed, does not deteriorate, but, like good wine, improves with age. As it has so many good qualities, a mushroom growth of specialists, more or less qualified, has entered the field largely for the purpose of making the most of this opportunity. The Quebec bridge disaster recently has contributed enough to bring the time-honored standing of constructive engineering into a somewhat disgusting light, and it can at least do no harm if some of us engineers go a bit out of our way in the endeavor to stem the tide of accidents in our profession."

The Dunkirk (N. Y.) Concrete and Stone Company, under the management of E. E. Elkins of Camden, O., will erect a substantial factory in Dunkirk. Concrete blocks will be made and sand will be supplied by the Point Gratiot Sand Company.

The Buffalo Cement Burial Vault Company has been organized with a capital of $5,000. The directors are August W. Pfeiffer, William J. Orr, Newton Andrews and John E. Davis, all of Buffalo.

The Perry Sand Company of 340 Fourth Street, Buffalo, is planning to open a branch of its business in Tonawanda, N. Y. The company recently sent a quantity of sand to be used in the construction of concrete work on an addition to the Buffalo Bolt Company's plant.

Senator Cassidy has introduced at Albany a bill which, if it becomes a law, would give New York State the privilege of concreting the Glen Creek banks in a way to permanently control the flood waters and save the village of Montour Falls, N. Y., from such inundations as it has suffered in the past. An appropriation of $30,000 has been asked for the purpose.

Gorsline & Swan of Rochester, N. Y., have secured the contract for the construction of the Genesee Street exchange of the Bell Telephone Company in that city. In addition to the building and its equipment there will be concrete work done in the immediate vicinity that will cost fully $50,000, making the total cost amount to $105,000.

Plans have been prepared by Dennison Fairchild, a Buffalo civil engineer, for the new concrete bridge to be constructed over the Oatka River in Le Roy, N. Y.

Citizens of Westfield, N. Y., are objecting to the delay of the Buffalo and Erie Traction Company in the matter of building a concrete viaduct in that village. The company obtained a franchise in Westfield nearly a year ago.

A report from Harpersville, N. Y., is to the effect that a company has secured an option on the Center Village dam, now owned by George Livingston, with a view of putting in a concrete dam for the purpose of generating electricity.

Dr. James S. Porter, alderman, is strongly advocating a plan by which Mayor Adam of Buffalo shall appoint a contractor who is expert in concrete work to act with the Commissioner of Public Works and the City Chemist in revising the specifications for Buffalo pavements requiring a concrete foundation.

The Empire Shipbuilding Company of Buffalo will construct a steam centrifugal sand suction steamer for the Builders' Supply and Sand Company of Erie, Pa.

The National Roofing Company's plant at Tonawanda, N. Y., which was damaged by fire to the extent of $40,000, has resumed operations.

A boulevard costing $200,000 will be built between Fort Erie, Ont., and Niagara-on-the-Lake, Ont., by the Canadian Government within the next two years.

The John H. Black Company, capitalized at $10,000, to deal in clay products, has filed its certificate of incorporation in County Clerk Price's office, Buffalo. The directors are E. C. Drewelow, L. E. Black and W. Joseph Degenhart.

Vice-President William F. Endress of the Jamestown, N. Y., Chamber of Commerce, has begun a movement to do away with all the grade crossings in that city at a cost of $200,000.

The Thomas Crimmings Contracting Company of New York City has been awarded contract No. 9 of the New York State Barge Canal. The company's bid amounted to $755,995. The work to be done on this contract covers five and a half miles of canal on the sixty-mile western level and between the towns of Albion, N. Y., and Medina, N. Y., in Orleans County.

Senator Grady and Assemblyman Palmer of New York State have introduced bills at Albany which had been prepared by State Engineer Skene, asking for an appropriation of $7,500,000 for the construction of highways during the coming year in New York State.

The efforts of the Lackawanna Steel Company of Buffalo to quarry valuable limestone deposits on the lands of the Tuscarora Indians near Niagara Falls are being opposed by these red men. The limestone is in great demand by ironmakers. The deposits were only recently discovered and are held by the Indians to be worth anywhere from $200,000 to $3,000,000.

The Board of Supervisors of Erie County, N. Y., have instructed Clerk Frank B. Steele to advertise for bids for the purchase of the entire stone crushing outfit, as it now exists, at the almshouse farm in this city.

Work on some important engineering projects has been begun under the supervision of the United States Engineer's office here this spring. The Great Lakes Dredging Company of this city is rebuilding a portion of the Buffalo breakwater which was damaged by a storm. The Canal Quarry Company is extending the Stony Point breakwall, and the Empire Engineering Corporation has begun its contract in the Black Rock Harbor.

Plans are being considered for the improvement of Pine Street in Binghamton, N. Y. The plan provides for the construction of an 18-inch brick gutter, laid on a concrete base and faced with a stone curb which holds the crown of the roadbed in place and prevents the gutter washing out the earth.

A representative of the New York State Engineering Department recently visited Waverly, N. Y., and conferred with the town highway commissioners there in regard to procuring stone and gravel for the building of a proposed new State road in that vicinity.

According to a report issued by New York State Engineer Skene the amount of the contracts let in connection with the State Barge Canal up to March 1, 1908, was $22,320,680. Of this amount $3,338,030 worth has been completed. On all contracts thus far 6,811,156 yards of excavation has been done, 123,827 cubic yards of concrete has been used and 10,753 piles have been sunk.

At a recent meeting of the Western Good Roads Association in Toronto, Can., A. W. Campbell, Deputy Minister of Public Works, in an address strongly advocated the building of bridges in the most substantial way by means of cement or concrete.

SYRACUSE, N. Y.

SYRACUSE, N. Y., March 17.—There is a distinct revival in building this spring, and the supply dealers and manufacturers are optimistic in spite of the financial depression.

The Paragon Plaster Company expect to have their new plant completed by June 15. Since the fire the company has discontinued the manufacture of sand-lime brick, but will start it up again along in the summer. The new buildings which will take the place of those destroyed by fire will cost more than $30,000. The mill will be fireproof and is built of reinforced concrete. The clay house is two stories high, 110 by 25 feet. The Paragon Plaster Company has the contract for brick on the new Manufacturers' Building at the State Fair Grounds, which will cost $220,000.

E. Lee Heidenreich, in a lecture on "Reinforced Concrete" before the Technology Club of Syracuse, dwelt on the new Stadium at Syracuse University. He said that the cracks on the surface of the seats were due to placing the steel mesh or fabric more than half an inch from the surface and to laying the surface after the top of the concrete had hardened and dried. In general, he said, it is a fine piece of concrete work, and the cracks can be taken care of by a concrete paint. Mr. Heidenreich is assistant engineer of the electrified division of the New York Central Railroad.

The plant of the Onondaga Vitrified Brick Company at Warners is now running with forty to fifty men.

George W. Pack & Son expect soon to start up their common brick yard. George W. Pack has practically recovered from his injuries caused by an engine running into his carriage.

With the opening of the canal in May activity will be renewed at the plant of the New York Brick and Paving Company.

The DeWitt Mining Company of Onondaga County has been incorporated to work a gypsum mine owned by E. B. Alvord & Co., near Janesville. The capital stock is $1,000, and the directors are Thomas F. Anderson of Syracuse and D. H. Weston and Harry Conklin of Jamesville. Mr. Conklin said that E. B. Alvord & Co. had been working the mine for about nine months and had penetrated 200 feet or thereabouts. A gasoline engine and electric drill have been installed. Some of the gypsum will be used at the Alvord mill and some will be shipped away.

The American Web Tile Sewer Company has been incorporated with a capital of $100,000 to manufacture all kinds of tile. The directors are William Cahill, Walter Welch and Edward P. Cahill. This company takes over the properties of the National Web Tile Sewer Company. It is expected that a factory will be built.

E. J. Stearns is doing a large tile business. He is now working on the new Baltimore lunch room and will soon put a floor in the St. Cloud Hotel. Green, silver grey and white tiles are the most popular.

The Central City Tile and Marble Company, 227 East Fayette Street, although newcomers in Syracuse, are doing a splendid business. C. E. Emerick is the manager.

The new tunnel under the Erie Canal which is being built by the New York Central Railroad Company will cost $100,000. The side walls are of concrete and the top is covered with 18-inch steel beams, which are filled with concrete. On top of these

beams will be a coat of concrete and a steel sheet covering. Most of the concrete work has been finished and 12,000 bags have been used up to date.

About $40,000 is being spent by the State in building a new Onondaga Creek aqueduct in this city.

Hill & Van Wagner, Kirk Block, have opened up the season and are laying a large number of cement sidewalks around the city.

C. J. Sullivan is doing a big sidewalk and cement block business.

PHILADELPHIA, PA.

PHILADELPHIA, PA., April 17.—There is evidence of a more than slight yielding of the depression in the cement market at present, but the improvement is slow and lacks snap. The mills are starting up, however, as fast as the demand for the product increases, as the stock has not been allowed to accumulate. Cement values have for some time touched bottom, but it is now the opinion of the conservative element in trade that prices will stiffen from now on.

The lime and mortar industries are running on the same lines as the general building supply trade, with a hopeful feeling as to trading during the coming more seasonable weather. Though the permits issued for building work have fallen far below those of a year or two back, there is sufficient work, if all the prospective plans materialize, to keep these trades active for some months to come. One piece of good news for business is that the city is contemplating the erection of quite a number of bridges, also other municipal improvements, in the near future. The firebrick and clay retort makers are encouraged over March business, but admit orders have been coming in only in spurts, and that trade has not as yet settled down to a steady basis; they feel, however, that indications for the future are reasonably fair.

The Whitehall Portland Cement Company, 1721 Land Title Building, on April 1 engaged the services of George T. Burridge in connection with its sales department. Mr. Burridge is decidedly a popular salesman throughout the Western territory. For some years he was sales manager of the Newaygo Portland Cement Company, Grand Rapids, Mich., but of late has been with the Bonneville Portland Cement Company, this city, which concern, on account of dissatisfaction of a political character among its members, has gone into a receiver's hands.

The Vulcanite Portland Cement Company, 1230 Land Title Building, report business showing some improvement of late, and if the reaction for the better continues they hope for a good business.

J. T. Wakeman, Philadelphia representative of the Edison Portland Cement Company, 613A Arcade Building, states that business is looking up somewhat. The company are starting up their mills as rapidly as necessity requires.

Joseph A. Horner, formerly secretary and treasurer of the Bath Portland Cement Company, was recently elected treasurer and general manager of the Nazareth Cement Company, Nazareth, Pa., succeeding P. H. Hampson.

Henry Longcope, sales manager of the Alpha Portland Cement Company, 909 Harrison Building, reports that considering the uncertain conditions of the commercial situation the company has had no reason to complain. Mr. Longcope is optimistically inclined and believes there is a possibility of an early stiffening of values.

It is announced that the Alpha Portland Cement Company has established a branch office in the National Bank Building at Savannah, Ga.

Philip S. Vollmer, 1210 Fidelity Building, representing the Atlas Portland Cement Company, is cheerful over the outlook. He reports that there is every reason to hope for a new infusion of vigor as settled weather approaches.

The E. S. Bortel Company, builders' supplies, northwest corner Eighteenth and Market Streets, report business a trifle slow, but they are hopeful of an early betterment.

The Cyrus Borgner Company, firebrick and clay retorts, Twenty-third Street above Race, have been getting in some good orders and inquiries.

The Philadelphia Fire Brick Works, firebrick and clay retorts, 2306 Vine Street, report trading as yet intermittent. March livened up considerably, but April has been a little irregular.

The Engineers' Club of Philadelphia held its regular business meeting at the clubhouse, 1317 Spruce Street, on April 4, and it was attended by 175 members and visitors. The following new members were elected: Active, Walter Davis Banes, Charles Elcock, James Edwin Gibson and Frederic Hamilton Hill. Junior membership, Carl Peter Birkinbine, Henry Edgar Birkinbine and Alben Warren Way. Associate membership, Robert Taber Eaton and Thomas Stewart Genay. George Maurice Heller, a visitor, presented a paper on "The Design of the Centering for the Main 232-Foot Concrete Arch Span, Walnut Lane Bridge, Philadelphia," which was followed by a short discussion. On motion the thanks of the club were extended to Mr. Heller for his paper.

The Aquabar Company of Philadelphia on March 19 filed articles of incorporation in the Camden County Clerk's office. Capitalization, $100,000. Incorporators: George F. Clopp, E. E. Whitman and George H. B. Martin.

The Pensauken Art Stone and Brick Company has been organized, with a capital of $350,000, to take over the property of the Pensauken Brick Company and complete the unfinished plant of the latter near West Palmyra, N. J. The incorporators are S. H. Howitz, T. D. Just and W. A. Leopold of Philadelphia; J. Doran of Haverford, Pa., and J. E. Welsh of West Palmyra.

The United Engineering and Construction Company, to do a general engineering, building, real estate and contracting business, obtained a charter, under Delaware State laws, on April 8. The incorporators are of Philadelphia. Capital, $250,000.

The Exhibitors' Association, in conjunction with the Builders' Exchange, gave its annual architects' and engineers' smoker on April 6 in the rooms of the exchange. The entertainment was provided by the members of the exchange. William A. Kramer and George Ehrenzeller gave a piano duet; Weld N. Clark, a recitation; George H. Lee, H. Weston Eyre and M. R. Alexander performed on the banjo and mandolin, and Benjamin K. Nusbaum contributed a vocal solo. The committee on entertainment were: Richard T. Cropper, W. H. Conover, Weld N. Clark, William C. Kramer, L. Bancroft Mellor, M. R. Alexander and Benjamin K. Nusbaum.

Samuel Drinkhouse, for many years one of the best known roofers in this city, died on April 12 in his 65th year.

More than 180 cement workers met on March 27 at Hoffman Hall, Fifth and Oxford Streets, to reorganize the local branch of the American Brotherhood of Cement Workers. Alfred Tracy of New York, general president of the organization, presided. Temporary officers elected were: Chris Baumann, president; Gus. Ruppel, secretary, and Peter Dons, treasurer.

On April 2 Mrs. Frederick Franks, wife of the manager of the Bath Portland Cement Company, touched the electric button which set off the largest blast in the history of the American cement industry. It is said 50,000 tons of cement rock were dislodged in the company's quarry by the blast. The holes were seventy feet deep.

Plans have been finished by Architects Rankin, Kellogg & Crane of this city for the new army supply depot to be erected at Fort Mason, near San Francisco, Cal., for which Congress has appropriated $1,500,000. The depot will be the United States terminal of the transport service between this country and the Philippines. The plans contemplated the construction of three large covered wharves, a sea wall, offices and storehouses, all of reinforced concrete and fireproof construction.

Elizabeth E. Holman, architect, has finished plans for a two-and-one-half-story house of frame and cement and a one and one-half-story stable of the same material, to be built in Moorestown, N. J., for N. R. Davidyan. The house will measure 29 by 32 and the stable 32 by 21 feet.

The William Steele & Sons Company has plans for a two-story and basement sewage pumping station, to be built at Baltimore, Md., for the Baltimore Sewerage Commission. The building will measure 188 by 159.9 feet, and will be built of structural steel, brick and terra cotta. Henry Brauns is the architect.

The William Steele & Sons Company has plans finished for the grandstand, bleachers, etc., at the new grounds of the Athletics, Twentieth Street and Lehigh Avenue. All structures will be of reinforced concrete, steel, brick and stone.

P. J. and S. T. Whelan were given permits on April 11 for an operation consisting of 118 two-story brick dwellings and six two-story brick stores and dwellings to be erected in the neighborhood of East Westmoreland, East Ontario and Argyle Streets. The cost is $199,000.

Negotiations are under way for the purchase of a site for a large apartment-house in West Philadelphia. It will be the largest "flat house" in the city, and will represent an investment close to $400,000. The location will be announced as soon as the site is secured, and work on the building will be begun immediately, as the financing of the project is said to have already been provided for.

William E. Howes will shortly erect thirty-nine two-story dwellings and two stores and dwellings on the north side of Brown Street, between Forty-ninth and Fiftieth Streets. Each house will measure 16 by 50 feet and the total cost will be about $125,000.

Thomas Killough was given a permit on April 10 to build twenty-eight two-story dwellings and four two-story stores and dwellings in West Philadelphia, at a cost of $75,200.

Charles J. Heckler has begun the construction of thirty-two houses on Twenty-second Street, Indiana Avenue and Hamburger Street, which will cost about $95,900. Later in the season another operation of fifty-eight houses on ground adjoining will be begun.

Henry L. Reinhold, Jr., architect, has been commissioned to prepare plans for a Colonial residence for G. Franklin Davis at Stone Harbor, N. J., on the new tract improved by the South Jersey Realty Company of that place. The building will be three stories high, 40 by 45 feet; exterior to be concrete cased, interior to be finished in enamel woodwork.

D. Folsom has prepared plans for a two and a half-story concrete dwelling, measuring 23 by 26 feet, to be erected in East Lansdowne, Pa., for Thomas W. Sherrard.

Oliver Randolph Parry, architect, is preparing sketches for a modern stable to be erected in Haverford, Pa. There will be room for four carriages, harness room, groom rooms, three stalls and box stall and loft space. The building will be constructed of cement concrete and will be a new feature in stable construction.

J. W. Ledoux is preparing plans for a water-power plant to be built on Main Street, below the Pennsylvania Railroad bridge, for the Schuylkill Navigation Company. It will be of brick, iron and concrete construction, one story high, 70 by 140 feet.

Grove City, Mercer County, is to have a building boom very shortly. Aside from many residences it is contemplated to erect a $20,000 State Armory, a $25,000 Presbyterian Church, a $35,000 Methodist Church and a $20,000 broom factory. Negotiations are also on for moving the Hercules Novelty Works from Erie to that place; also an electric light plant is under consideration.

A contract was awarded to Frank H. Myers to build a $15,000 conservatory at Ravenhill, the handsome Weightman country estate, on School Lane near Gypsy Lane. It will be of iron frame and glass, with a concrete base, and will measure 83 by 116 feet.

DETROIT, MICH.

DETROIT, April 18.—The local cement market shows considerable improvement, and dealers say that the outlook is more than encouraging, owing to the great amount of building now being done in this city.

Julius Kahn, president of the Trussed Concrete Steel Company of this city, denies a rumor that his company is to remove its headquarters to Youngstown, O. Mr. Kahn says that although the company's manufacturing plant is at that city, the question of removing the headquarters there has not been considered.

The new Edgar Sugar Company's warehouse in this city is constructed of concrete reinforced with steel. A remarkable test of concrete was conducted by the contractors, this week. A total weight of 80,000 pounds of pig iron was placed upon one panel of the concrete floors and there was no deflection noted.

The boiler rooms of Detroit schools are to be made fireproof with concrete walls and ceilings and steel doors.

After considerable litigation it is now practically certain that the plant of the Ætna Portland Cement Company at Fenton, this State, will be reopened early in June by a new company, to be headed by John A. Myers of Boston.

The annual report of the Wolverine Portland Cement Company caused much surprise, as it showed that the only uncollected account on the company's books for the past year, out of a business of nearly $900,000, was an item of $72.

Delegates representing about 150 building contractors from all the large cities of the lower peninsula of Michigan met in Detroit this week and organized a State association of employing building contractors.

A $200,000 concrete and steel building is to be built in Detroit for the Cloistered Dominican Nuns.

During the last few months the city has spent $103,000 for cement walks, and a large sum will be expended during the summer in the same way.

Plans have been prepared for the new bridge to connect Detroit and Belle Isle. The bridge is to be of reinforced concrete and will consist of eighteen graceful arches, rising above the surface of the water to a height of 23 feet. The bridge will be 80 feet wide and will have a jack-knife opening to permit the passage of ships. The estimated cost is $1,500,000.

The Nazareth Granite and Cement Company succeeds the Nazareth Marble and Granite Works at Nazareth, Pa., in the monument business and will also go extensively into the manufacture of concrete blocks, etc. The new firm are building a new plant in the heart of the town on a site which they have recently purchased and are erecting their own building, which will be completely equipped. A side track will connect the plant and yards with the Bangor and Portland division of the Delaware and Lackawanna Railroad.

THE USE OF CONCRETE ON THE FARM.

Continued from page 40 C.

It is clear to even the casual observer that the remedy for all these evils is a cement block silo. We glanced at this proposition casually and concluded that it would bear closer investigation, and as a result have engaged in the manufacture of cement silo blocks to quite a large extent.

We procured a set of circular plates, and by altering slightly the cores of the block machine we were using equipped ourselves with an outfit. We mold our blocks circular in form, so that when laid in the wall they make a true circle without any cutting or fitting.

Along the outer edge of the top of the block we put a ½-inch groove, in which we put a steel wire or band to assist in taking up the lateral pressure when the silage is settling.

The diameter of a silo depends, of course, on the capacity desired. It is better to increase the depth rather than the width within certain limits, for two reasons: Increased depth gives greater pressure and closer packing, resulting in a more thorough exclusion of the air. Then a silo should be so calculated that the surface will be fed off each day. For when the silo is once opened the top is, of course, exposed to the air and spoils rapidly.

However, when a very large capacity is desired, it is better to increase the diameter slightly, as a small increase in diameter gives a comparatively large increase in cubical contents, and thus reduces the ratio between the cost and the contents.

The average size silo that we build is 14 feet 6 inches inside diameter and 30 feet high. The construction of a silo of cement blocks is simple. The foundation is built very cheaply of field-stone, or preferably of concrete. Where concrete is used and the soil will permit, no form is required. We excavate a circular trench and fill it with concrete, and when the concrete sets, remove the earth from the center.

The blocks are laid in the same manner as in an ordinary building, except that steel-wire bands are put in the grooves at about every third course. A silo is usually built with a door up the entire height to allow for the removal of the silage as it is taken off the top. Across this opening we put ⅝-inch rods, which are tied with the steel wire about 1 inch from each side. This provides a good ladder and strengthens the wall.

We use no door frames, but make a special jamb block notched to receive a 2-inch plank, which is put in place as the silo is filled and held in position by the pressure of the silage. This provides a cheap but good door, and there is no frame to rot away. As the planks rot they can be replaced at very little trouble and expense.

It is well to plaster the inside of the silo with a ½-inch coat of cement plaster finished as smooth as possible, as the acids of the silage attack the lime in the joints. This plaster also makes the walls smooth enough to allow free settling of the silage and covers up defects in the workmanship of the masons.

The advantages which we claim for our silo are: It is a permanent building. The first cost is the limit of the outlay, and no painting or other repairs are required. It needs no adjusting of bands as is necessary to allow for the shrinking and swelling of stave silos.

A cement block silo is not subject to decay, for so far as I have been able to ascertain the silage has no effect on it.

Our walls are dry and frostproof. They are fireproof.

And, finally, they are cheaper than brick and stone because of the ease with which they are laid. The cost of laying our blocks, using of course country masons, runs from 2½ cents to 4 cents a block, our block being 24 inches long, 8 inches high and 9 inches thick. This is for labor alone, the cost of mortar being the same as for any other form of block building.

I have tried to give you in a haphazard way facts regarding cement block silos and their advantages for the farmer, and now I want to give you some of their advantages for the cement-block maker.

In the first place they are an absolutely staple article. Your stock is always good and you have no odds and ends of shapes and styles to consign to your waste pile.

Make only one face and stick to it. We use the panel face.

The only variations you have are in the diameter of the silo. We usually try to run the one size, which is 14 feet 6 inches inside diameter. We find this is about the average. There is absolutely no cutting or fitting of blocks for odd-sized openings, and you are not made the victims of the whims of different architects.

All the figuring required is the number of regular blocks and door blocks. This being true, you can run silo blocks at any time, and after you have your market pretty well established you need not be afraid of overstocking.

We make silo blocks at this season of the year and get the farmers to haul the blocks during the winter. This has mutual advantages, as it provides work for you during the dull season and the farmer's time is worth less at this season than at any other season of the year.

And this reminds me of another point to which it might be well to call your attention. In figuring with farmers do not include their time in your estimate—of the cost to them of a silo or any other building, for you will find that the average farmer does not figure his time or the time of his teams as part of the cost. He merely figures the cost as the actual money expended.

I will give you an illustration of this: Last week I sold a silo to a farmer whose nearest railroad station is nine miles from his farm. Now in showing the cost of the silo to him I figured the cost of the blocks, freight, mason labor, mortar and roof, but made no mention of hauling about one thousand blocks a distance of nine miles.

I do not mention this fact as casting any reflections on the intelligence of the farmer. For any one who starts out with a poor idea of the intelligence of the average farmer will find before he has gone very far that he is sadly mistaken. This is simply an attitude that the farmer has gotten into from long habit and for reasons which it is not necessary for me to go into. And I merely state it as a fact which you will do well to consider.

The value of a trade in silo blocks is particularly apparent during the present period of business depression. We, like a great many others, are uncertain as to what conditions will prevail during the coming building season, and are a little afraid to make up a large stock of building blocks. We simply started to run silo blocks and are going out among the farmers. And I am glad to say we are selling enough to at least keep our molds from rusting.

Side Talk

The Meacham & Wright Company, Chicago, announce that they will remove their offices on May 1 to 805-10 Corn Exchange Building.

H. W. Caldwell & Son Company, manufacturers of machinery for industrial plants, whose main office and plant are at Seventeenth Street and Western Avenue, Chicago, have removed their New York office from 95 Liberty Street to the Fulton Building, Hudson Terminal, No. 50 Church Street.

In order to make its corporate name more fully indicative of its principal business, which is the manufacture of the famous Vulcan steam shovels, the Vulcan Iron Works Company (Toledo) has had its corporate title changed by proper legal process and will be known hereafter as the Vulcan Steam Shovel Company. The change became effective April 15.

The State Board of Control, Madison, Wis., has awarded to the Marquette Portland Cement Company a contract to furnish cement for State buildings at Mendota, Chippewa Falls, Waupun and Wales and the Northern Hospital at Oshkosh. The same cement is being used in the foundations and floors and also in the heating plant tunnel of the State Capitol.

Ballou's White Sand Company, Millington, Ill., will commence washing all their sand about May 1. Their white silica sand has won an envinble reputation for color and general quality. Their supply is unlimited, and they are now better prepared than ever to fill the rapidly increasing orders which are coming to them.

The white Portland cement made by the Sandusky Portland Cement Company, Sandusky, O., has been specified for the exterior finish of the Southern Pacific Hospital at San Francisco, also for the interior finish and for pointing the stone work on the new bank building at San Jose, Cal., and for a swimming pool in mosaic work at Atlantic City, N. J.

That concrete blocks are playing an important part in the construction of many State and public buildings is evidenced by the fact that Hercules concrete block machines are now in use at the Onondaga County Penitentiary at Jamesville, N. Y., the prison camp and hospital of the Massachusetts State Prison at West Rutland, Mass., and the New York City Reformatory on Hart's Island, N. Y. The last named institution has already completed several buildings, and one three-story building, to be used as a tailor, tin and carpenter shop, is now in course of construction. The first building completed was a small building requiring 560 blocks. This was completed in six working days of six hours each by eight inexperienced boys. The building, while small, is very artistic, being made of panel-faced blocks with plain corners. Blocks are being turned out at the rate of 200 every six hours, and as they are giving the highest satisfaction, they will undoubtedly be used generously in the construction of many of the principal buildings. Hercules machines make unusually attractive stone and are doing much toward advancing the industry.

The new illustrated catalogue of the Chicago Concrete Machinery Company (24 South Canal Street, Chicago) is worthy the careful study of everybody interested in concrete-mixing, rock-crushing and earth-handling machinery. The famous Chicago concrete mixer and the Symons portable stone-crusher of course occupy places of honor in this interesting piece of trade literature. These have always been well in the lead, ever since their introduction, but even in the best products of inventive skill improvements are possible, and this new catalogue shows that it has been the constant aim of the manufacturers to develop greater efficiency. The result of this is shown in the fact that many of the details of construction have been simplified in the new 1908 models. Important among the auxiliary appliances introduced is a new superhopper and a charging elevator, which facilitate the work of elevating the material to the mixer, affording a great saving of manual labor, and which will doubtless increase the popularity of the machine as well as its earning capacity.

The Maumee Chemical Company (Toledo, O.) are meeting with splendid success in the distribution of their excellent waterproofing compound, and the "Maumee" brand is growing in favor everywhere. Among many testimonials which have recently come to them is one from A. B. Sturges, architect of the new clubhouse of the Toledo Yach Club. In this beautiful reinforced concrete building "Maumee" waterproofing compound was used throughout, and it has given excellent satisfaction. Mr. Sturges says that it not only thoroughly waterproofs the cement work, but that practical cement workers claim that it increases the strength of the concrete.

Probably nowhere does the old adage, "No test like time," hold good more strongly than it does with mortar colors. The "Red Brick" brand manufactured by the Ricketson Mineral Paint Works, Milwaukee, has made good under this test to a remarkable degree. In the twenty years these colors have been on the market there is yet to be recorded a single case of crocking or fading. This excellence is due first, to the remarkable purity of the ores used; second, to the specially devised separators which extract all but the absolutely permanent oxides; third, to the unusual fineness of the grinding. The absolute purity and great fineness of these colors make them mix easier and go much farther than less carefully prepared brands.

"Concretes, Cements, Mortars, Plaster and Stucco" is the comprehensive title of a 520-page volume recently issued by Frederick J. Drake & Co., Chicago. The author is Fred T. Hodgson, O. A. A. This is another of Mr. Hodgson's practical works that appeals directly to the workman whose business it is to make and apply the materials named in the title. As far as it has been possible to avoid chemical descriptions of limes, cements and other materials, and theories of no value to the workman, such has been done, and nothing has been admitted into the pages of the work that does not possess a truly practical character. Concretes and cements have received special attention, including reinforced concrete, and the latest methods of making and using cement building blocks, laying cement sidewalks, putting in concrete foundations, making cement casts and ornaments, are discussed at length. Plastering and stucco work receive a fair share of consideration and the best methods of making and using are described in the usual simple manner so characteristic of Mr. Hodgson's style. The price of the book postpaid is $1.50 in cloth and $2 in half leather binding. It may be ordered through ROCK PRODUCTS.

Whether a mixer that measures and mixes is superior to one that only mixes depends on whether the measuring mixer is reliable, for there are certainly the same reasons for measuring by power that there are for mixing by power, if the measuring is exact and the machine reliable. It is obvious that a measuring apparatus that can not be relied on to do its work regularly and accurately at all times and under all possible conditions is worse than useless. That there are many measuring mixers that can not be thus relied on to feed damp and wet sand and gravel is well known. In fact, this failure to handle wet materials satisfactorily has been so general that many engineers and concrete workers of experience have become prejudiced against measuring mixers, believing that none are reliable because they have never seen one of that kind. The principal feature of superiority in the Standard continuous mixer (manufactured by the Standard Machine Company, Kent, O.) lies in its ability to measure and feed sand or gravel in any condition, dry, damp, wet, or saturated, and feed it regularly and accurately day in and day out without a hitch or interruption and without any attention whatever other than to see that there is plenty of material in the hopper.

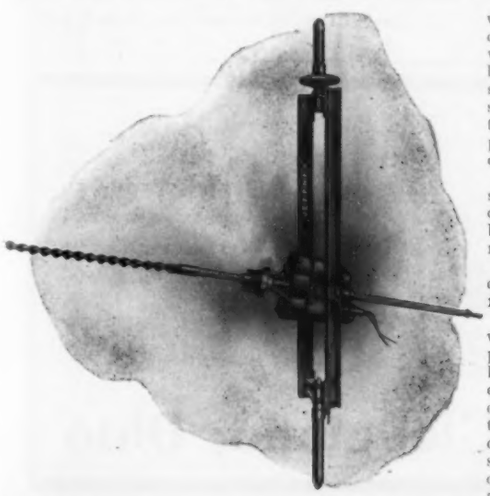
The Sandusky Portland Cement Company, Sandusky, O., manufacturers of Medusa waterproof compound, report it specified by the Bureau of American Republics. This is one of the highest compliments that can be paid to the quality of any product. The material has recently been used successfully in the following work: Concrete water tanks, Gloeckler Building, Pittsburg, Pa.; basement walls, Joplin Hotel, Joplin, Mo.; Third National Bank Building, St. Louis; United States Navy Yard, Puget

Sound, Wash.; Lynn Haven Hotel, Norfolk, Va.; Cleveland Concrete Building Block Company, Cleveland, O., in their entire output; Oregon Short Line Constructions, Salt Lake City, Utah; Oswego Falls Paper Company, Fulton, N. Y.; G. & T. Earle Company, contracts, Wilmington, England; Armour & Co., construction, Chicago.

The Besser Manufacturing Company of Alpena, Mich., report a gratifying amount of business in 1908. With the big line this company manufacture and the money-making possibilities which their various machines offer, there is hardly a place where their machinery is not found in operation, and daily shipments are being made to all points from Maine to California. The Besser cement tile machinery especially is in great demand. The United States Government is using it in the Reclamation Service. Their improved molds are made as large as 60". The Besser automatic tamper tile machines, which have a capacity of 2,000 tile per day and up, although on the market for but two years, are now in use in nearly every State, and in some States dozens are in daily operation. This machine makes 4" tile for less than one cent per foot. The call from cement block manufacturers is for a block machine which will use quite wet material and also have speed. These are the main features of the Besser face-down machine, and their order books show that blockmakers have found what they want. The Besser brick machines and mixers are also having a large sale. Constant enlargements have been made to the Besser factory, but at times they are unable to keep up with the demand. They advise customers to get their orders in early and thus avoid any possible delay.

Following are some of the principal rock and cement plants which are using the famous Bucyrus steam shovels, manufactured by the Bucyrus Company, South Milwaukee, Wis.: Atlas Portland Cement Company, Northampton, Pa.; American Brick Company, Chicago; Barr-Clay Company, Streator, Ill.; John J. Callanan, Whitehall, N. Y.; Chicago Brick Company, Chicago; Bath Portland Cement Company, Bath, Pa.; Edison Portland Cement Company, Stewartsville, N. J.; Illinois Brick Company, Chicago; Sandusky Portland Cement Company, Dixon, Ill.; Union Portland Cement Company, Ogden, Utah; McAvoy Vitrified Brick Company, Perkiomen Junction, Pa.; Holran Stone and Lime Company, Maple Grove, O.; Cobbleskill Paving Brick Company, Cobbleskill, N. Y.; Kaaterskill Paving Brick Company, Catskill, N. Y.

The Jeffrey Manufacturing Company of Columbus, O., have for a long time been handling electric-driven auger drills for use in coal mines, and have recently brought out a heavier type, as shown in the accompanying illustration and known as the A-5 drill. This drill is to be used for drilling gypsum, fire clay, rock salt, and other material of about the same hardness. The motor is of ample capacity to take care of the most severe service that the drill plant will stand, and has a nominal rated capacity of 3 horsepower with a momentary overload capacity of from



6 to 8 horsepower. The gearing may be arranged for auger speeds from 100 to 300 r.p.m. and the thread bar provided with square threads from 6 to 12 per inch.

The Anchor Block Machine.

An interesting catalogue is that of the Anchor Concrete Stone Company of Rock Rapids, Iowa. The company's advertisement appears on another page. From the beautifully printed and ably edited catalogue we reproduce the accompanying illustration and quote the following extract:

"The first and most necessary thing to insure success in the business of manufacturing blocks is to purchase a machine that turns out a block with real merit—a block that is just as represented—a block that appeals to the buying public, and one that, when put into a job, will be a standing advertisement to your business.

"When you buy a machine and advertise the block it makes as being frost and moisture proof, you want to know that you are presenting the absolute truth to the people; and if you are not and your

block gets wet through, your business venture is bound to fail. The building industry is too permanent a one to make a success of unless you get in right—have the goods and show the people that you are telling the truth.

"Don't be deceived into believing that a hole in a block is an air space or in any manner serves the purpose of an air space; and more, don't be deceived by representations to the effect that two holes make an air space, even though the holes interlap or are staggered, for in either case they do not constitute an air space that will prevent moisture from penetrating a concrete block. The cement block industry has received a more serious set-back from false notions, immature ideas or willful misrepresentations than from anything else. It is a short-sighted policy that will prompt anyone to make representations concerning a building material that can not be absolutely proven.

"If you start to manufacture anchor blocks, you will begin right. You can tell a prospective purchaser of blocks that he can erect a building from them that will be frost and moisture proof and tell the truth, because it has been demonstrated in buildings for several years; and then, a simple look at the block speaks more eloquently and tells a stronger story to convince a practical man that moisture will not penetrate a divided wall, than the largest catalogue ever published.

"The manufacturers of cement block machinery should be honest with the purchaser of their machinery, and if not, the owners of machines will not be honest with the purchasers of blocks, and the result is that the whole industry gets a black eye.

"We guarantee the Anchor machine to do all we claim and the block to fulfill all the claims we make for it.

"However, were it simply a question of claims, we would not ask your attention, but we embodied the principle of a continuous air space in the Anchor block, which all must admit at the outset is a necessary and indispensable one, and one around which every successful block must be built in order to meet the public demands, yet, we are not obliged to make claims, we have the goods, and they speak for themselves, and if you are not convinced, from what you can see, coupled with your knowledge about building and building materials, we do not hope to convince you with any extravagant claims we might make. Your success means our success, your failure means our failure, hence, it would be suicidal for us to try to deceive you."

Clay Working Machinery
Yard Supplies of all Kinds
CEMENT MIXERS
ELEVATORS
CONVEYORS
DRY PANS
CRUSHERS
BARROWS AND
TRUCKS
Steam or Animal Power Brick Machinery
"MARTIN"
BRANCH 507
LANCASTER, PA.

Peirce City White Lime
PEIRCE CITY WHITE LIME
THE WHITEST, PUREST AND STRONGEST IN THE WORLD
TRADE MARK
MANUFACTURED BY
PEIRCE CITY LIME CO.
PEIRCE CITY, MO.

$75 HAND POWER CONCRETE MIXER
14 Year Old Boy Can Operate It
Send for free booklet "True Concrete" Sidewalk or Blockmakers
SARNSON MACHINERY CO.
Room 10. 806 Chestnut St., St. Louis, Mo

W. D. MEYER,
MANUFACTURER OF
Marble White Lime
115 Delaware Street, QUINCY, ILL.

YOU LOSE MONEY
Each Day You Do Not Operate This Machine
HOW?
By not making pressed cement brick, by using more labor and cement than this press requires, or by losing trade through inferior quality of brick.
THIS HITS YOU IT CAN'T MISS
Better look into it right NOW
Ask for Bulletin "11"
Here is a piece of reliable, durably built machinery, 700 pounds of iron and steel, perfectly machined and assembled, built for long, hard usage. It makes hard, fine finished, strong cornered, sharp edged brick. Makes them fast, 3 to 6 M daily one man, and he must press them just as hard when you're not looking or when he's tired—not so with tamping. No failures here and the price is lower than ever
Free Bulletins
A-2 2-piece pressed stone.
B-2 Face down blocks.
C-2 MIXERS.
D-2 Ornamental and sill moulds.
E-2 Burial Vaults and grave moulds.
Helm Brick Machine Co.
415 Bank Bldg., Traverse City, Mich.

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No display except the headings can be admitted.

Remittances should accompany the order. No extra charges for copies of paper containing the advertisement.

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EXPERIENCED SALESMEN.

Pittsburg or New York City, or both.
Address C. 10, care ROCK PRODUCTS.
wanted. One familiar with the builders' supply trade at

EXPERT PORTLAND CEMENT SALESMAN,

to travel Oklahoma and North Texas. Must submit the best of references. Satisfactory compensation for person of ability. Single man between the ages of 27 and 35.
Address C. 11, care ROCK PRODUCTS.

MANAGER OF EXPERIENCE

desired. One who has made a success of the sand-lime brick business and who is willing to invest in the company under right conditions.
THE MICHIGAN PRESSED BRICK CO., Detroit, Mich.

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MANAGER OF CEMENT PLANT,

of cement working machinery plant, sales manager or salesman, or manager of plant making cement blocks and all other cement products, wants situation.
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COMPETENT PLASTER MILL MANAGER

desires to change his position to one offering a broader scope for his abilities. He is thoroughly experienced in the calcination of gypsum, the manufacture of hard wall plaster and fireproofing materials. He is conversant with the keeping of accounts and cost systems and is entirely capable of taking complete charge of a stucco plant of any size. He is 36 years of age, of good habits, thoroughly reliable and very energetic. Best of references furnished. Address C. 13, care ROCK PRODUCTS.

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Mould wash that positively keeps cement from sticking to moulds or machines. Costs 25 cents a gallon to make. Full directions for making, $1.00. Waterproofing that prevents cement work from absorbing water. Costs 25 cents a gallon to make. Full directions for making, $1.00. Both of the above, $1.50.
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NEW LIME CRACKER

for sale. One large size Butterworth & Lowe lime crusher complete with slot adjuster, discharge pan and sweep. The above machine is new, never having been in operation.
THE ANDERSON FOUNDRY & MACHINE WORKS,
Anderson, Ind.

SECOND HAND MACHINERY.

1—No. 4 McCully crusher. Good as new.
1—7 H. P. Miami gas engine.
1—10 H. P. New York Safety steam engine.
1—10"x12" horizontal, center crank Erie engine.
Write for complete list of machinery.
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51-57 Laurel St., Philadelphia, Pa.

CONCRETE MIXERS, ETC.,

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UNITED CEMENT MACHINERY MFG. CO.,
Plain City, Ohio.

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Wanted to sell, one Stedman disintegrator, No. 40, also one boiler, capacity ten tons per hour, with elevator, shafting, etc. Used about one week. Apply to James S. Duncan, Toledo, Ohio, or B. H. TAYLOR,
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1—No. 1 Style "D" Gates Gyratory Crusher.
1—No. 3 Style "D" Gates Gyratory Crusher.
6—Rock Drills, all sizes.
Boilers and Engines, all sizes.
Write us your wants.
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941 N. Main St., St. Louis, Mo.

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Gates No. 4 Gyratory, in fine condition. Cheap.
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Engines—Corliss, Automatic and Throttling, all sizes from 1 to 500 H. P.
Boilers—Horizontal, Portable and Vertical, all sizes from 1 to 200 H. P.
Pumps, Heaters, Tanks, Sawmill and Geheral Machinery.
Write for our prices on your requirements.
THE RANDLE MACHINERY CO.,
1745 Powers St., Cincinnati, O.

FOR SALE.

No. 9 Gates, Style K crusher (new)	$6,250
No. 5 Gates, Style K crusher	950
No. 3 Gates, Style D crusher	475
Standard gauge 5-ton locomotive crane	3,000
Mundy 6½x12 double drum hoist	675
Mundy 6¼x10 double drum hoist	625
Lidgerwood No. 72 double drum hoist	800
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Air compressors, drills, concrete mixers, cableways, cars, locomotives, rails, etc.
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One 540-ft. McKiernan compressor.
Two 3¼ McKiernan drills.
One No. 4 Austin crusher with elevator, boiler and engine. EDWARD HELY, Cape Girardeau, Mo.

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20-ton overhead traveler, 38-foot span; electric power or rope drive. 135 feet track; strictly first-class. Also 20-ton stiff leg stone yard and quarry derrick, Scoville make. 50-foot boom, double engines on mast, revolves full circle either direction. Fine condition.
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No. 6, No. 5 and No. 3 "Gates" gyratory crushers.
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One No. 4 Gates, good working order.
One No. 5 Gates, good as new.
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One No. 7½ and No. 5 Austin Plant, complete, including elevators, screen, engine and boilers, compressor, cars, etc. A great bargain.

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The most secure fastening in concrete as well as in stone
Send for Samples.
H. Farrington, 45 Broadway, New York

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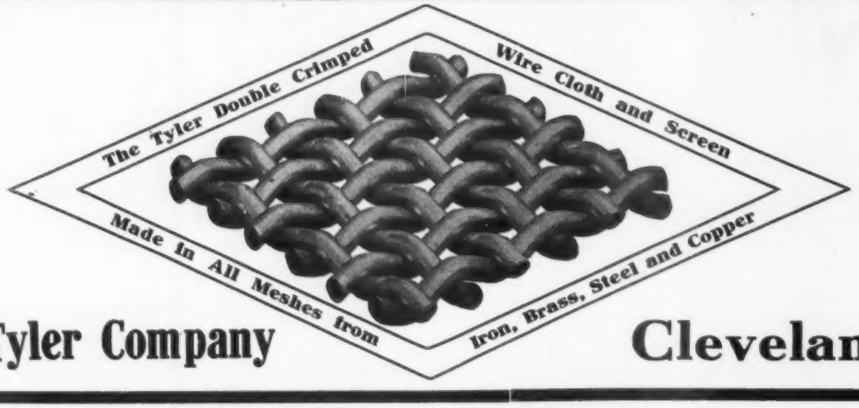

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Ingersoll-Rand Drills in the Quarry of the Alpha Portland Cement Co. Martins Creek, Pa.

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Quality, Price, Shipping Facilities, and Prompt Attention, Unexcelled by any. Drop us a line for Prices.

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DESIGNING AND CONSTRUCTING ENGINEERS
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CEMENT MILLS A SPECIALTY

OFFICES: ALLENTOWN NAT. BANK BLDG. ALLENTOWN, PA

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ABSOLUTELY TRUE PORTLAND, PURE WHITE

Over 700,000 Square feet floors laid with Berkshire "Snow White" Portland Cement. Specified in all work where QUALITY is essential

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FOR

Cement, Lime and Plaster

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WE SOLICIT YOUR ORDERS, KNOWING THAT ONCE A CUSTOMER, ALWAYS A CUSTOMER

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Now comes Amatite—with a mineral surface which requires no painting and which will last longer *without painting* than the other kind did *with constant painting.*

The top surface, being mineral, is unaffected by weather or climate. It really protects.

The waterproofing material in Amatite is pitch—*the best resistant to water known.* Water will in time dissolve or disintegrate almost anything, but it is powerless against pitch.

Roofings of twice the price often do not protect as well because they are not waterproofed with pitch.

Amatite is easy to lay—any one can do the work. We furnish you free nails and liquid cement for laps.

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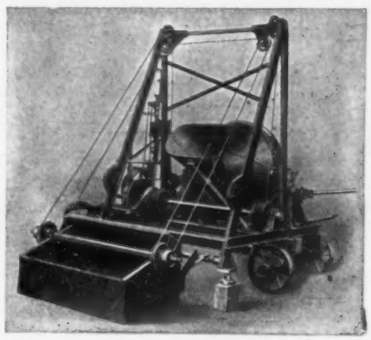
WHY CONTRACTORS PREFER THE

SMITH MIXER



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This machine makes a block with a real air space that we guarantee frost and moisture proof.

Standard Anchor Machines make blocks that lay in the wall 8 in. by 24 in., and any width from 8 in. to 12 in.

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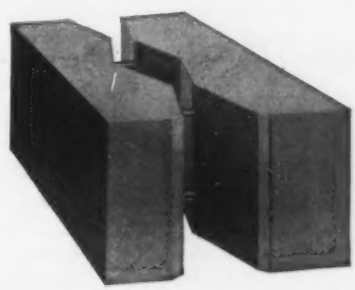

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CRUSHED, GROUND AND BOLTED SOAPSTONE.

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WHITE
Silica
SAND

JUST the right thing for molding artistic concrete work of all kinds. Pure silica as white as snow that will produce a white product for ornamental exterior and interior concrete finish. The perfectly practical facing material that has never been obtainable before. Quantity unlimited, price reasonable.

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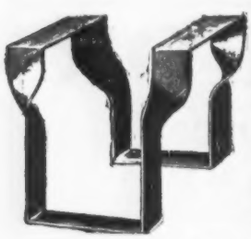

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For Quarries, Gravel Pits and Concrete Work

We manufacture CARS of all styles and sizes. Also ELEVATOR BUCKETS, ELEVATORS, REVOLVING SCREENS, HOISTS, SKIPS.

If you need any of the above write us for prices; we can quote you the lowest and give you what you want.

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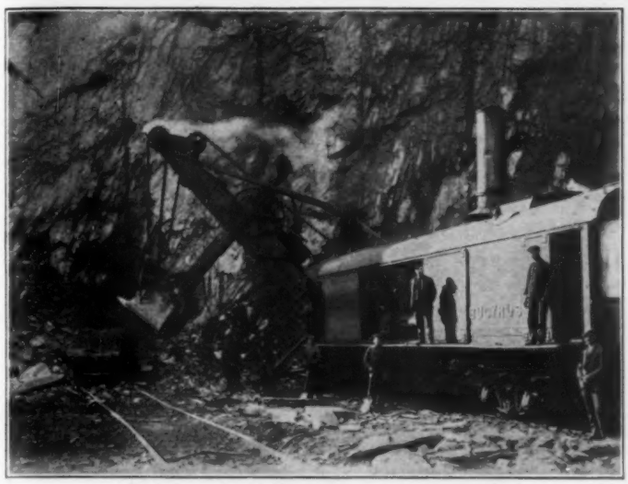

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In
CEMENT ROCK

We Build Steam Shovels for Quarry Stripping, Cement Mining or Loading Crushed Stone

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SOUTH MILWAUKEE, WIS.

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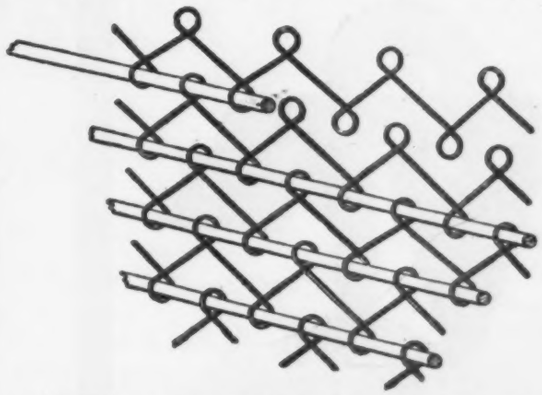
Reinforced Concrete Structure



Adaptable to all possible forms of construction, such as Arches, Columns, Silos, Floors or Walls. Uniform strength in every position. Any desired size of rods, wire or mesh may be used that may be necessary for the work required.

Rapid, Cheap and Simple Construction

This Patent is for sale. If not sold soon I will make arrangements to have the material manufactured for the market.

CHAS. MANKEDICK, Patentee,
P. O. Box 397. SULLIVAN, INDIANA

"IT PAYS TO INVEST"

THE

SCHENK CEMENT DRAIN TILE MACHINE

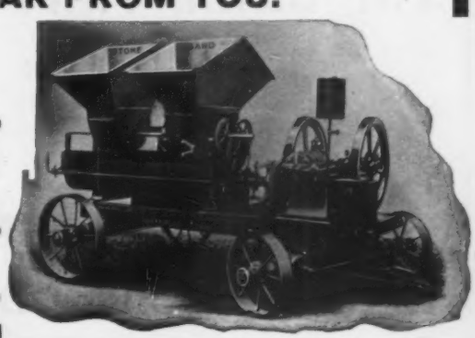
Is the opening wedge for a successful business, it pays you big interest, and profits and is a money-making proposition. Why not use the wedge?

Makes 3M to 4M 4″, 5″, 6″, 7″, 8″, 10″ and 12″ tile in 10 hours with six men and a ten Horse Power engine. It also makes 14″, 15″ and 16″ tile. "It's a wonder."

LET US HEAR FROM YOU.

THE PERFECTION CONCRETE MIXER

Gives you a thorough mix, and in fact has all the merits that is possible to give a mixer. Catalog on request.

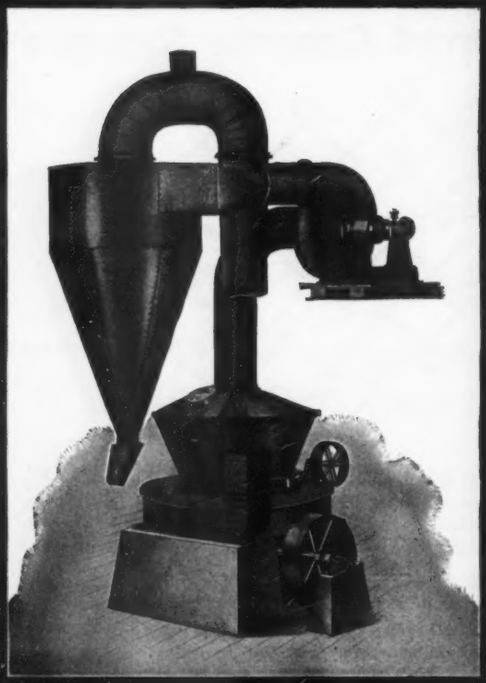


THE CEMENT TILE MACHINERY CO.

The Largest Manufacturers of Cement Working Machinery in the World.

22 Roth Street - - - WATERLOO, IOWA, U. S. A.

Tell 'em you saw it in ROCK PRODUCTS.



SAVING MONEY
IN YOUR
GRINDING ROOM
Is not all that

THE
RAYMOND SYSTEM OF
AIR SEPARATION
WILL DO FOR YOU

In every case where this system has been installed it has proven itself an economy not only in the actual grinding and separating of materials reduced to powder but in saving money or improving the work of other departments of the factory. The reading of our book may surprise you as to what we can do for you.

That you have no fault to find with your present methods is no proof that there is not a better way. It will cost you nothing to read the book. Just ask us for it. The reading of it may mean thousands of dollars in your pocket.

USE THE COUPON

RAYMOND BROTHERS IMPACT PULVERIZER CO.,
141 Laflin St., CHICAGO

SIGN THIS COUPON, TEAR OFF AND MAIL

RAYMOND BROTHERS IMPACT PULVERIZER CO.
141 Laflin St., Chicago

Please send your book "MAKING AIR MAKE MONEY"
Name _____
Firm _____
Address _____

36

If you're prompt, this space is yours,

If not, watch to see who takes it.

Price is reasonable enough.

NEW SYSTEM OF SEWER CONSTRUCTION

Steel Centers and Formers for building Concrete Culverts, Sewers and other hollow structures in their permanent location.

By the use of these Molds, no lumber is required for forms.

The walls of the sewer are made uniform.

The back filling is carried on as the work progresses.

The centers and formers are easily set up and quickly removed when the concrete is set.

There is a saving of concrete.

They will save the contractor, time and money.

A little booklet will tell you all about them. Write for it. Address

HICKSON'S
Sewer Mold Co.,
Mt. Gilead, Ohio

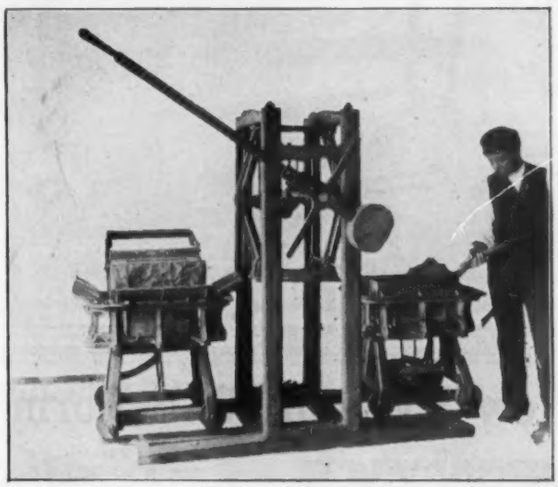
THE DRILL THAT NO QUARRY SHOULD BE WITHOUT

Simplest of Construction, Light, Convenient, Easily Handled, Always Ready and Drills from 2 to 10 Inches per Minute in Hard Rock. Every Machine Guaranteed.

Write for Catalog of
WONDER DRILLS, BITS AND BIT SHARPENERS

Hardsocg Wonder Drill Co. **Ottumwa, Iowa, U. S. A.**

Somers' Pressure Block Machine

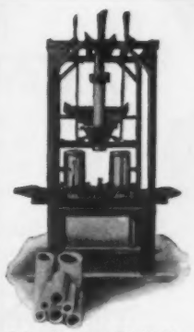


You are looking for the machine that will make you the most money. Our sales are principally to persons who have started into the business and have learned just enough about the great possibilities of the block business to be convinced that if they can get a machine that is speedy and at the same time one that will make any block the architect may call for, their financial success is assured.

The Somers' Machine will do it. 3 cents saved in labor on every block because of its great speed. Two machines operated successfully under one Press, thereby doubling the capacity. Operated automatically by levers. More moderate in price than the common Hand Tamp outfits. Write for our Catalogue and prices.

Somers Bros., Manufacturers

205 North Coler Ave., - Urbana, Ill.



Automatic Tamper Tile Machine.

BESSER Concrete Machinery

will give you

ALL THE PROFITS

Besser can furnish all your machines to best advantage and at all prices, as he is for the best plants everywhere.

Besser Cement Tile Machinery

is earning 100% profit for satisfied users in every State. All sizes 2 inches to 60 inches. You can make 4 inch tile for one Cent each with our **Automatic Tamper.** See our Tile Moulds, they are famous

Why don't you get the Profits in the **Tile Business.** Small investment. But you must get Besser Machinery.

BESSER FACE DOWN is the only block machine to obtain full value from the Face Down Principle. It makes the cheapest and best block in endless varieties. It is the only machine to combine the use of **Wet Material** with **Great Speed.**

BESSER MIXERS all types and prices, will save you money.

BESSER LARGE CAPACITY BRICK MACHINES, Shingle machines, etc.

Besser has everything for you in High Grade Improved Machinery.

Buy from us and get started right as thousands are doing. To overcome competition install Besser Machinery.

Send for free literature and 25 Cents for Big Catalogue and Instruction Book.

Besser Face Down Machine.

THE BESSER MFG. CO.

904 Eighth St., Alpena, Mich.

Manufacturers of the Most Complete Line of Concrete Machinery

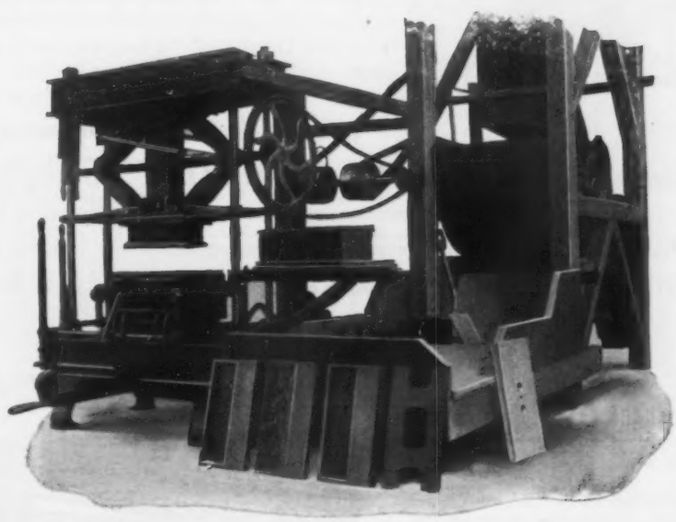
PERFECTION AT LAST ATTAINED IN THE CONCRETE BLOCK INDUSTRY

THE PERFECTION POWER BLOCK MACHINE is the only Power Block Machine on the market, making a Hollow Concrete Building Block under Heavy Pressure and at Great Speed.

Machines have been in constant use since July 1st, 1905, with practically no expense for repairs.

The machine handles sand, gravel, crushed rock, slag and coloring materials perfectly.

All materials accurately measured, thoroughly mixed and uniformly pressed under 200,000 pounds pressure.



Makes 8, 9 and 12x8x24 inch blocks in five faces, and fractional and angle blocks.

Machine can be arranged to make **Two Piece** and **Faced** Blocks if desired.

All machines delivered, set up and put in operation to show a guaranteed capacity of 60 blocks (12x8x24 inch) per hour with 5 men.

Blocks perfectly cured in 24 hours in Vapor Curing Kilns of our own design.

Full details, catalog, testimonials, etc., sent upon request.

THE PERFECTION BLOCK MACHINE CO.

KASOTA BUILDING :: MINNEAPOLIS, MINN.

"KENT" CONTINUOUS MIXER

"The Mixer that measures and Mixes"

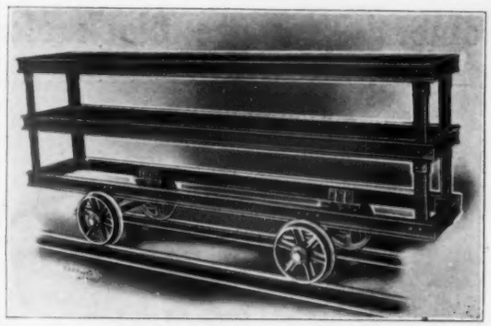
"You fill the Hopper the Mixer does the rest"

Simple, reliable, economical, durable and moderate in price

Write for Catalogue and Prices to

The Kent Machine Co.

306 N. Water St., Kent, O.



The "KENT" Block Cars, Transfer Cars, etc.

BARGAINS

X-L-ALL CEMENT TOOLS

$125.00 Face Down Block Machine - - - - only	$ 42.75
90.00 Face Down Block Machine - - - - only	41.00
75.00 Batch Mixer - - - - - - only	29.90
400.00 Side-Walk Mixer - - - - - only	225.00
Adjustable Column Block Machine, 8x8x8, 12x12x8, 14x14x8 and 16x16x8, complete - - - - -	25.50
14x56 Adjustable Cap and Sill Machine, cheap at $35.00 -	20.00
14x42 Adjustable Cap and Sill Machine - - - -	16.00
18-inch Adjustable Coping Block Mold - - - -	4.00

X-L-ALL ENGINEERING DEPARTMENT

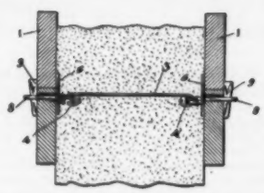
Send us a sketch of any building you wish to build and we will name you a price on a complete set of drawings and specifications, and give you the number of blocks or brick required. We can save you money on your building.

Write for Our Catalogue 6B.

Burrell Manf'g. Company, 102 Grove Street, BRADLEY, ILL.

New Type of Wall Form

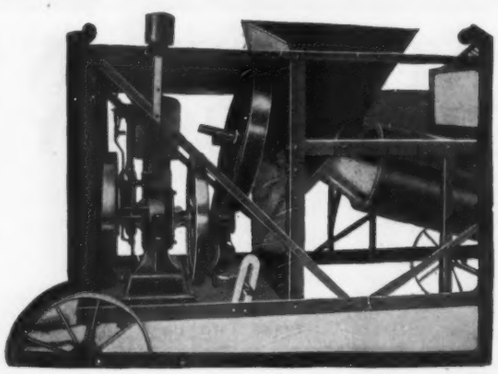
Investigate this new system; boards held firmly while concrete is being placed; easily and quickly removed; makes wall plumb and uniform in thickness.



SAVES { LUMBER LABOR TIME

Write for circular explaining the system and the appliances:

Charles Dietrichs, 15 Kaufman Avenue, Little Ferry, New Jersey.



THE DEMOREST

LITTLE GIANT MIXER

On a 5 mile sewer job the contractors estimated that they could save $2,000.00 in moving expenses alone by using the LITTLE GIANT, besides putting in the work at 50% the cost with any other machine. Isn't it about time you "got wise" and saved some of the good dollars you are paying out. ONLY RESULTS count. CLAIMS of manufacturers amount to nothing.

WRITE FOR PRICES

BALLOU MFG. CO., 35 High St., Belding, Mich.

"The Svenson is Easily the Simplest and Fastest Mixer Ever Built"

Quit wasting money and making bad concrete with that "batch" machine. Don't fuss and lose time with complicated mixers. Let us tell you about this simple, strong machine.

The Svenson Concrete Mixer

Has only five moving parts, all on one shaft. It keeps going and it keeps the men going.

We want to tell you our ideas on proper mixing, for the "Svenson" mixes dry, then wet—the only scientific way. And it proportions the mix positively, just the way you set it.

Send for Catalogue.

Svenson-Shuman Machine Co.,

602 Bessemer Bldg., PITTSBURGH, PA.

Pat'd No. 811518.

Make Money

As others have already done it by making Cement Brick upon a Peerless Brick machine.

The Price is Right. The Brick are Right.

More Peerless Machines now in use producing a profit to the owners than all others combined.

The people who use the "Peerless" know its profit-making qualities. We will send you a list of the concerns who have already made money by doing business with us, if you wish.

WRITE FOR ILLUSTRATED CATALOGUE.

Peerless Brick Machine Co.,

100 Lumber Exchange, MINNEAPOLIS, MINN.

PERFECTION IN BLOCK MAKING

If you wish to attain this you should combine these three important features:

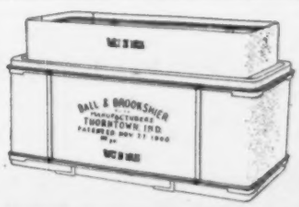
Wet Process Face Down Damp Curing

The PETTYJOHN INVINCIBLE Machine does this, and is the only machine that does. Tandem Invincible makes two blocks at once. Price $65.00 and up. Single Invincibles, $35.00 and up. With our **Triple Tier Racking System** green blocks can be stacked three high direct from machine with inexpensive home-made rigging. Plans and blue prints free to customers. It economizes space, reduces off-bearing distance and above all insures slow, even, damp and perfect curing and bleaching.

Write for our latest edition of **"Stone Making,"** a book of valuable data, just off the press—FREE.

THE PETTYJOHN COMPANY

614 North Sixth Street Terre Haute, Indiana



Hoosier Cement Burial Vault Molds

All steel, no wood to shrink, swell and warp.
Always ready, without repairs, and good for a lifetime.
Best cement proposition known. 500 per cent profits.
Telescopes and adjusts for making SEVEN sizes of cement vaults.
Makes vaults with circle corners, preventing cracks. Corners strongest portion of walls.
For particulars address

BALL & BROOKSHIER, Thorntown, Indiana

Patentees and Manfrs. Ask for Circulars Nos. 9 and 10

Ask your architect to specify **The Zimmerman Patent Metal Base and Ventilator** to prevent your porch columns and floor from rotting. Send for circular A. Thousands in use.

C. E. Zimmerman, Syracuse, N. Y.

THE HERCULES CONCRETE MIXER

A Mechanically Perfect Mixer that Not Only Mixes But Properly Proportions

The Hercules Concrete Mixer is the product of over two years of careful study and experiment. It is a wonderfully perfect mixer, which challenges the attention of all who desire perfection, not only in mixing, but in proportioning.

The Hercules is built to stand the racket. The frame is solid steel, the gears are

machine cut, and it is very easily operated with a 2½-power gasoline engine. It is the only continuous Drum Mixer made. The engine and all working parts are encased in a sheet steel hood, which affords complete protection from the elements.

The Hercules is absolutely perfect in proportioning of aggregates. It is an impossibility for this machine to make a mistake.

It is free from all such annoyances as sprockets, springs or chains. There are no clumsy paddles that break and no unreliable worm to clog. It is but the work of a moment to change from one proportion to another.

Full information sent to anybody interested. Write to-day

Century Cement Machine Co.

MAKERS OF THE FAMOUS HERCULES CONCRETE BLOCK MACHINES

179 W. Main Street ROCHESTER, N. Y.

HERCULES SPECIAL CONCRETE BLOCK MACHINE AND COMPLETE OUTFIT, FOR ONLY $120

Made of Hercules Blocks

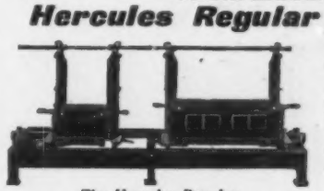
If you are going into the Concrete Block business or want an outfit to build yourself a home the Hercules Special outfit is the best you can buy.

It makes blocks of any design from 3 inches to 32 in length, and height and width in proportion. It is a face down machine and is the only machine that admits of a wet mixture and coarse material, which is the secret of success in Concrete Block making.

There is big money in the Concrete Block business, but you must have the right machine in order to make good blocks. A Hercules Special outfit is all you need to go into the Concrete Block business. Investigate the Hercules Special before you buy—it is the best machine and we can prove it.

Beautiful Illustrated Catalog Free

Hercules Regular Block Machine



The Hercules Regular.

The Hercules is known as the real concrete block maker.

With this simply constructed machine you can make real concrete blocks, ranging in size from two inches to six feet in length. Besides perfect blocks you can make water tables sills, lintels and steps.

The Hercules is built so strongly and so mechanically perfect that it never gets out of order, and can always be depended upon at critical times to properly perform its duty.

CEMENT TOOLS

We manufacture tools for Cement Workers that are better than the ordinary. Ask for Tool Catalogue—It's Free.

Century Cement Machine Co.

179 W. Main Street, ROCHESTER, N. Y.

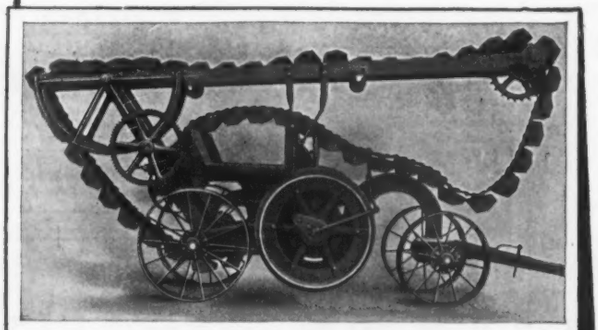
Saving Power in Rock Crushing

The efficiency of a rock crusher depends upon the percentage of the power that is available at the crushing point—the amount that remains after the friction is taken out. The

Symons Portable Stone Crusher

has but two shafts and two sets of bearings and the main shaft is roller bearing in place of the four shafts and four sets of journal bearings of other jaw crushers.

There's enormous friction in four sets of journal bearings operating under the tremenduous strain of a stone crusher.



In the Symons, the main frame is a single steel casting.

The crusher is shorter and can be operated in less space than any other of equal capacity.

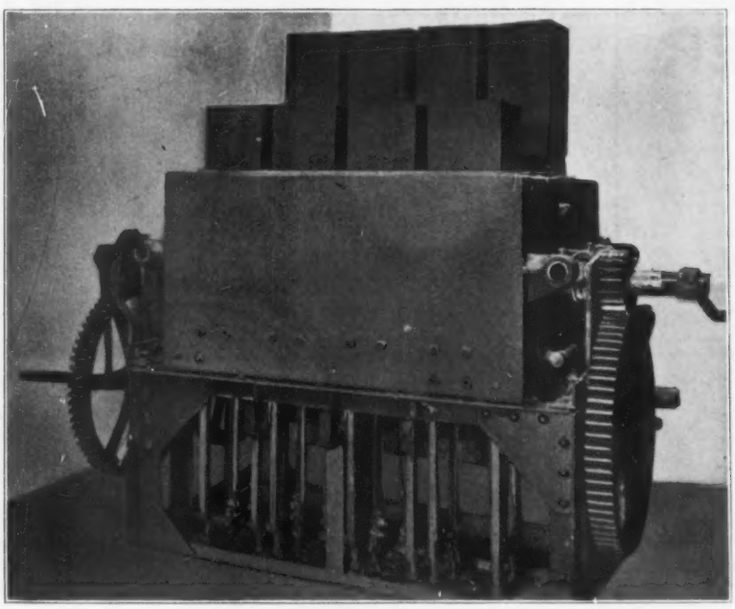
No toggles are required. The size of product is varied by changing the distance piece between the jaw and the eccentric.

The roller bearing not only does away with nearly the whole friction load of the crusher when empty, but the friction of a roller bearing is independent of the load. In a plain journal bearing the friction increases directly with the load.

There's efficiency in every mechanical action of the Symons. Get the catalog.

CHICAGO CONCRETE MACHINERY CO.,
20 South Canal St., Chicago
82 Warren Street, New York City

FIREPROOF STRUCTURAL TILE



400 Tiles per Day With Three Men.

Any shape and size required, are successfully and profitably produced wherever sand, ground rock, furnace clay or other concrete aggregates are obtainable, using any standard quick setting Portland cement.

Concrete Partition Blocks, Conduits and Sewer Pipe

are made with big profit even in a small one machine shop.

Supply dealers can equip a small plant right in their yard and turn sand and gravel into high priced building materials.

TILE MACHINE SOLD ON DEMONSTRATION GUARANTEE

To thoroughly demonstrate the guarantee which we make to parties ordering the machine we make the following offer: We will install on approval for responsible parties paying freight an eight-tile machine, at our risk, under the following conditions: The parties ordering are to furnish steam, the pay of the three men operating the machine and the required material, quick-setting Portland cement and suitable aggregate. We will then, without the use of any other machinery, turn out 400 perfect tiles per day. All our claims being established in this way, the sale of the machine becomes complete, and purchasers on their part agree to purchase from us such other machines and equipment as their market requirements call for. If we fail in any way to make good our claims, the machine is to be returned.

The Merit of the Material Speaks for Itself.

If you own a sand supply, crusher refuse or furnace slag is handy—investigate for factory propositions.

CONCRETE STONE AND SAND CO. = = Youngstown, Ohio
A. A. PAULY, INVENTOR.
Eminent Engineers and Architects indorse the Pauly System of Concrete Tiles and Pipes. Here is where dealers can get "all the profit."

The Book

Getting down to Details Of Construction

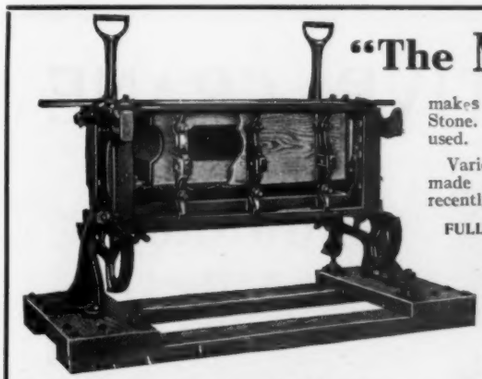
The fact that it is
Lower to charge than any other mixer
The most rapid mixer in existence, and
Has the easiest operated discharge on any mixer
Are not the only reasons for the supremacy of the

CHICAGO CONCRETE MIXER

The entire mixer is carried on a single casting, insuring perfect alignment
It is operated by a single ring gear at the greatest possible distance from dirt
The drum rests on trunnions placed close together, maintaining equal bearings
The main gear is housed from dirt and obstructions
It is operated with least labor—It does not tilt to discharge
Equipped with steam, gasoline or electrical power
It's fully described in the catalog—Mailed free

Chicago Concrete Machinery Company
20 South Canal Street
CHICAGO

The Mixer



"The Miles"

makes a True Concrete Stone. One size of pallet used.

Various sizes and styles made on same machine recently improved.

FULLY GUARANTEED

Can supply combinations suitable for your requirements.

Full particulars on request.

The P. B. Miles Mfg. Co. Inc. 130 W. Courtland St., Jackson, Mich.

The Noble Cement Mill

FOR

Pulverizing

Lumpy Cement is the Cement users friend

It makes it as soft and fluffy as sifted flour

Noble Concrete Machinery Co.
West Freemont St.
Fostoria, Ohio

YOU

Can produce this or any of many other different designs of **Concrete Porch Columns,** all beautiful, by using

SIMPSON MOLDS
We Guarantee This

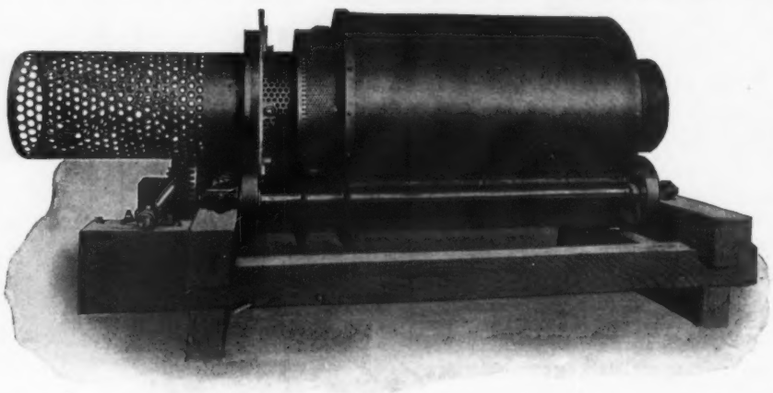
Write us for full particulars, with illustrations and letters from block makers and house owners. :: ::

The Simpson Cement Mold Co.

498 North High Street
COLUMBUS, :: :: :: OHIO

Tell 'em you saw it in ROCK PRODUCTS.

JOHN O'LAUGHLIN'S SCREEN



For Granite, Limestone Gravel, Sand, Coal, Coke
or Any Materials requiring Separation.

JOHNSTON & CHAPMAN CO.

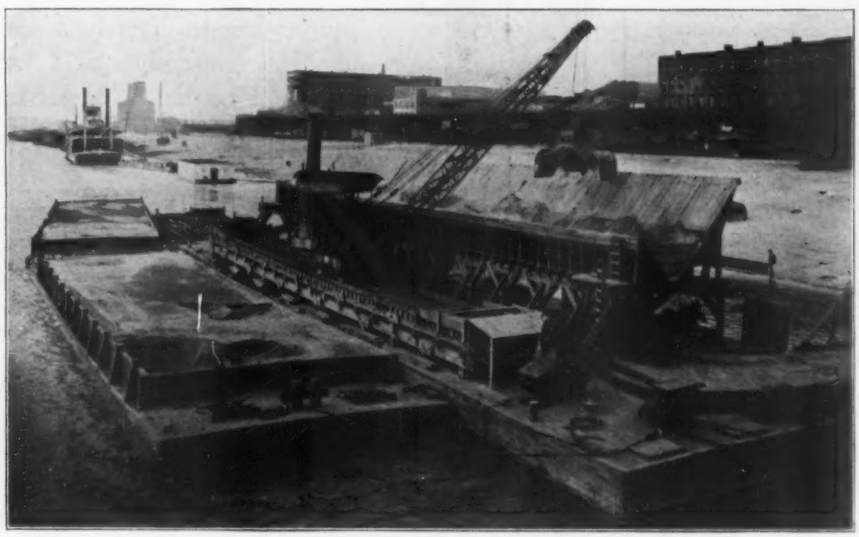
offer the
JOHN O'LAUGHLIN SCREEN
of which they are Sole Manufacturers.

Our experience as manufacturers of **Screens** and **Perforated Metal Screen Plates** for the **Sizing** of **all kinds** of **Crushed** and **Pulverized Material,** has made us conversant with screening requirements of nearly every description. We endorse as much superior to old methods, the principle of the O'Laughlin Screen which reverses the usual process, discharging the coarse grades of material first so that the finer mesh screens are not worn by the coarser particles, and the wear of screen plates, and power required for the driving of screen machinery are enormously reduced. The Screen, (shown in the accompanying illustration) furnishes an equal and much more effective area of screening surface in much less space than necessary in the old system, and the number of sections can be made to suit the number of sizes of material wanted. These screens are in successful and profitable operation all over the United States. One of the first installed at Racine, Wis. has a capacity of over 2000 cu. yards or 2500 tons per day of ten hours, grades being 4″, 2½″, 1½″, ¾″, and ⅜″. Compared with a set of old style screens of similar capacity, the repair bill per 100,000 cu. yards was found to be $15.00 for the O'Laughlin against $300.00 for the old style screens. We court investigation of the work of this screen. The fact is, that no one needing to size material in any quantity can afford to be without it. Estimates promptly furnished on request.

JOHNSTON & CHAPMAN CO., 1333 to 1345 Carroll Avenue **Chicago, Illinois**

Perforators of all Sheet Metals, Flat, Cylindrical and Conical Perforated Screen Plates for Quarries, Mines, Reduction Works, Mills and all Industrial Purposes

BROWNHOIST LOCOMOTIVE CRANE



Equipment of Sand Dock in the Harbor of St. Louis

Equipped with

"BROWNHOIST" Grab Bucket

Such an equipment is equally efficient in the handling of broken stone, gravel, etc., or without the Grab Bucket for the lifting and transporting of heavy materials.

Write us for catalogues.

The Brown Hoisting Machinery Co.

Main Office and Works, CLEVELAND, O. **Branch Offices, Pittsburg, Pa., New York City**

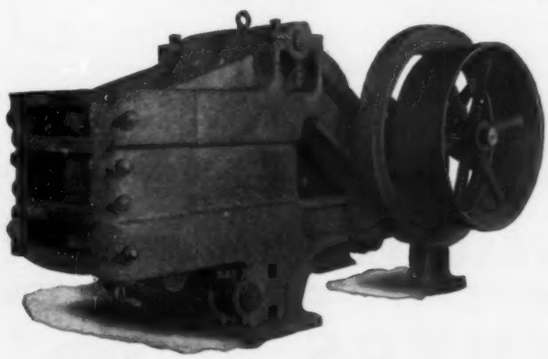
ENTERPRISE PLASTER MIXER

NOISELESS,
DURABLE and EFFICIENT.

For Mixing Hair Fibre, Wood Fibre and Retarder with Dry Plastering Materials.

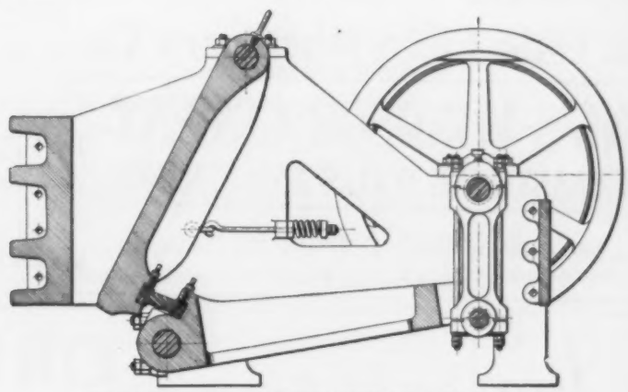
Calcining Kettles

Jaw and Rotary Crushers for Gypsum, Reels, Vibratory Screens, Hair Pickers and Transmission for applying power.



EHRSAM NO. 4 JAW CRUSHER.

This machine will handle large chunks and reduce from 30 to 40 tons of Gypsum per hour to 2½-inch maximum or smaller if wanted.



NO. 4 JAW CRUSHER, SHOWING SECTIONAL VIEW OF NIPPER.
The jaw opening at inlet is 18x28 inches.

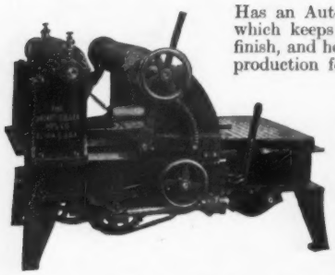
The J. B. Ehrsam & Sons Mfg. Co.,

BUILDERS OF

COMPLETE EQUIPMENTS FOR PLASTER MILLS

Enterprise, Kansas

The Leonard Wood Fibre Machine



Has an Automatic, Proportional, Increasing Feed, which keeps grade of fiber uniform from start to finish, and holds machine to highest possible rate of production for the grade of fiber and number of saws. Does not begin with fiber and end with dust, nor fall off in rate of production on each log, from 40 to 80 per cent as do the ordinary non-increasing feed machines.

Works logs up to 24x24 inches. No royalty string attached to sale. Pay no attention to misrepresentations of our competitors but write for descriptive circular and terms to

The Shuart-Fuller Mfg. Co.
ELYRIA, OHIO

THE SHUART-FULLER MFG. CO., Elyria, Ohio

Gentlemen:—What is the very best, cash-with-order price you will make on another Leonard Fiber Machine? We want no other machine but yours. It is all and more than you claimed for it, and is running steady ten hours every day and doing fine work.

Yours truly, GUARANTY WOOD FIBER PLASTER CO., Chattanooga, Tenn.

CUMMER CONTINUOUS PROCESS
FOR
CALCINING GYPSUM

NO KETTLES USED — PLANTS IN OPERATION

Great Saving in Cost of Manufacture and Quality of Product Guaranteed.

The F. D. CUMMER & SON CO., Cleveland, O.

GET THE BEST
Finest Line of Gypsum Machinery
MADE
KETTLE CRUSHER NIPPERS
ASK FOR CATALOG OF
MOGUL NIPPERS. OPEN DOOR POT CRUSHERS
Best Mills in the United States Have Them
DES MOINES MFG. & SUPPLY CO., Des Moines, Iowa, U. S. A.

SPECIAL MACHINERY AND FORMULAS
FOR THE MANUFACTURE OF
WOOD FIBRE PLASTER, FIRE PROOFING AND KINDRED PRODUCTS

We furnish the latest improved FIBRE MACHINE, (fully patented) also FORMULAS, on a reasonable proposition. The strongest companies and oldest manufacturers are operating under my contracts.
WRITE FOR TERRITORY

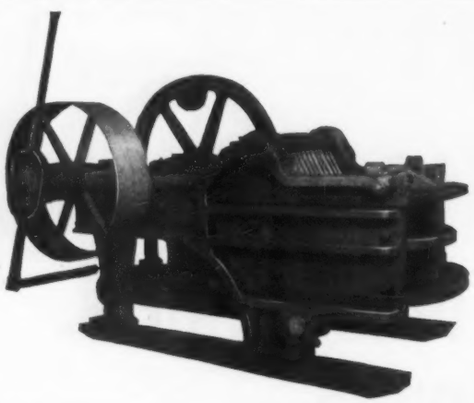
The Ohio Fibre Machinery Co. J. W. VOGLESONG, GENERAL MANAGER **Elyria, Ohio**

KING'S WINDSOR CEMENT
FOR PLASTERING WALLS AND CEILINGS

Elastic in its nature, can be applied with 25 per cent less labor and has 12½ per cent more covering capacity than any other similar material

Buffalo Branch, CHAS. C. CALKINS, Manager
322 W. Genessee Street

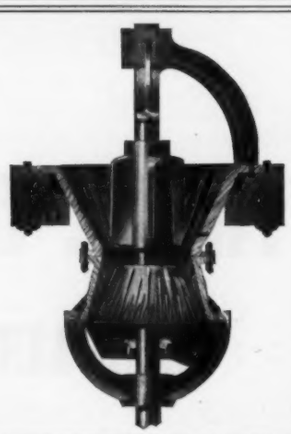
J. B. KING & CO., No. 1 Broadway, New York



CRUSHERS
for soft rocks, burnt lime, etc.
GYPSUM MACHINERY
We design modern Plaster Mills and make all necessary Machinery, including Kettles, Nippers, Crackers, Buhrs, Screens, Elevators, Shafting, etc.

SPECIAL CRUSHER-GRINDERS FOR LIME HYDRATORS

BUTTERWORTH & LOWE
17 Huron Street, GRAND RAPIDS, MICH.



LET OUR POLICY

of manufacturing a uniform and thoroughly reliable stucco

INSURE

you against producing an inferior wall plaster

The Niagara Gypsum Company

MANUFACTURERS OF

Niagara Brand

- STUCCO
- NEAT CEMENT PLASTER
- WOOD FIBRE WALL PLASTER
- SANDED WALL PLASTER
- FINISHING PLASTER
- PREPARED FINISH
- SUPERFINE PLASTER

Our electrically equipped mines and mills are now in operation with a capacity of 300 tons per day and we assure you of prompt service.

Mines and Mills: Oakfield, N. Y. **General Offices: 597 Michigan St., Buffalo, N. Y.**

Limestone and Shale

FOR MANUFACTURE OF

Portland Cement

ON THE

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WEST AND SOUTH

Coal, Water and Good Labor

For Full Particulars Address

J. C. CLAIR, Industrial Commissioner

I. C. R. R. CO.

No. 1 PARK ROW, CHICAGO

TWENTY LONG YEARS

of time and weather tried out Ricketson's famous "Red Brick" Brand.

They Never Fade

COLOR

for Mortar, Brick, Cement, Stone, etc., and proved it to be absolutely permanent. Red, Brown, Buff, Purple and Black.

Ricketson Mineral Paint Works

MILWAUKEE, WISCONSIN

Jamestown Paint and Varnish Co.

JAMESTOWN, MERCER COUNTY, PA.

Manufacturing specialists of,

Chocolate Mortar

Color (not good for fudge). One carload will color mortar for 1,000,000 brick. Get busy.

We also have some DOUBLE STRENGTH BLACK up our sleeve. A postal card will do.

Tell 'em you saw it in ROCK PRODUCTS.

RETARDER

UNIFORM AND STRONG

Suitable for all kinds of Stucco and Plaster. Write for sample.

Pennsylvania Retarder Co.
Mosgrove, Pennsylvania

PLYMOUTH CEMENT
AND
WOOD FIBER PLASTER

The Brand that's Made from Pure Gypsum Rock.

WRITE US FOR PRICES AND ADVERTISING MATTER.

Plymouth Gypsum Co.
Fort Dodge, Iowa

Stucco Retarder

Strong
Uniform
Fine Ground
RETARDER

We are the oldest Retarder firm in the United States, and above is our motto. New fire-proof plant and prompt service.

FREE SAMPLE ON REQUEST

Chemical Stucco Retarder Co.
WEBSTER CITY, IOWA.
INCORPORATED 1895

BEST THE BROS
KEENE'S CEMENT
MEDICINE KANS LODGE

BEST BROS.

Keene's Cement

FOR

PLAIN AND ORNAMENTAL PLASTERING

EQUAL IN QUALITY TO FOREIGN MAKES

MILLS AND QUARRIES:
MEDICINE LODGE, KANSAS
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EASTERN OFFICE: . . CLEVELAND, OHIO

THE
"INDEPENDENT"
BRAND

Is Manufactured Only by

American Independent Gypsum Co.
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UP-TO-THE-MINUTE PLASTER MAKERS

Works Fine. Try It You Will Like It

If you want your plaster to be of the best grade you will use our Retarder.

Elcessor Stucco Retarder Co.

Manufacturers of

Highest Grade Retarder for All Kinds of Wall Plaster

Main Office and Works
First St. and Monongahela River, Braddock, Pa.

Shipments made via N. Y. C. P. R. R. and Bessemer & Lake Erie Railroads.
Samples sent on request.

Tell 'em you saw it in ROCK PRODUCTS.

STUCCO—Lycoming Calcining Company

Garbutt, Monroe County, N. Y.

Enlarged, Re-equipped, Better and Larger than ever. Capacity, 250 tons per day. First Stucco mill built at Garbutt. Now located on two R. R. systems. Shipping facilities unsurpassed. Ten wall plaster Companies now using our Stucco exclusively, under contract. Write for price.

MAIN OFFICE, - - - - WILLIAMSPORT, PENNA.

RETARDER Wood Fiber

THE OHIO and BINNS RETARDER CO.
PORT CLINTON, OHIO

Reliable Stucco Retarder=Strong=Uniform in Strength=
Duplicate power plant (electric and steam power) installed so as to preclude any possiblity of shut down and consequent shut down of mixers who depend upon us for their supply of Retarder. We have a capacity large enough to supply every retarder user in the U. S. and Canada, and some to spare for Europe. Our mills are fireproof in every particular. Write us for prices and information.

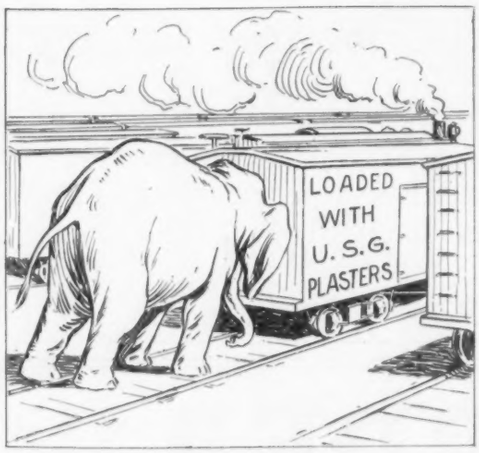
THE OHIO and BINNS RETARDER CO.
PORT CLINTON, OHIO

Empire Gypsum Co.

The Empire Gypsum Company's new mill, with capacity of 200 tons daily, is in operation and they are prepared to promptly furnish the best quality of Empire Stucco, Empire Neat Plaster, Reliance Wood Fiber Wall Plaster and Excelsior Wall Plaster Sanded.

Garbutt, Monroe County, New York.

Tell 'em you saw it in ROCK PRODUCTS.



WAIVING the matter of Supreme Quality, which must be conceded to U. S. G. Plaster Products—here is WHERE THE DEALER COMES IN for other advantages, in buying and selling our materials.

The Dealer Gets: Everything needful in plastering materials. As for instance: Cement Plasters, Prepared Plasters, Wood Fibre Plasters, Finish Plasters, Stucco, Hydrated Lime, Mouldings, Fireproof Partition Blocks, Fireproof Lathing Material, Fireproof Studding, Decorative Finishes, etc., etc.

The Dealer Gets: Quicker Shipments and Frequent Freight Savings on Mixed Cars, in buying all of these from one reliable source.

The Dealer Gets: A brand of material well known and salable in his territory. As for instance: Ivory, Imperial, Rock, Alabaster, Granite, Flint, Baker, etc., etc., etc.

The Dealer Gets: Courteous Attention, Prompt Service, the "Square Deal" our fixed policy.

The Dealer Gets: Live Aggressive co-operation, including up-to-date Advertising.

The Dealer Gets: The effective "boosts" of our splendid selling force—with Architect, Contractor, Plasterer and Builder.

The Dealer Gets: New Selling Commodities—Original and Exclusive Plaster Specialties, which mean new Customers—Growing Business—Larger Net Profits with less work and worry. As for instance:

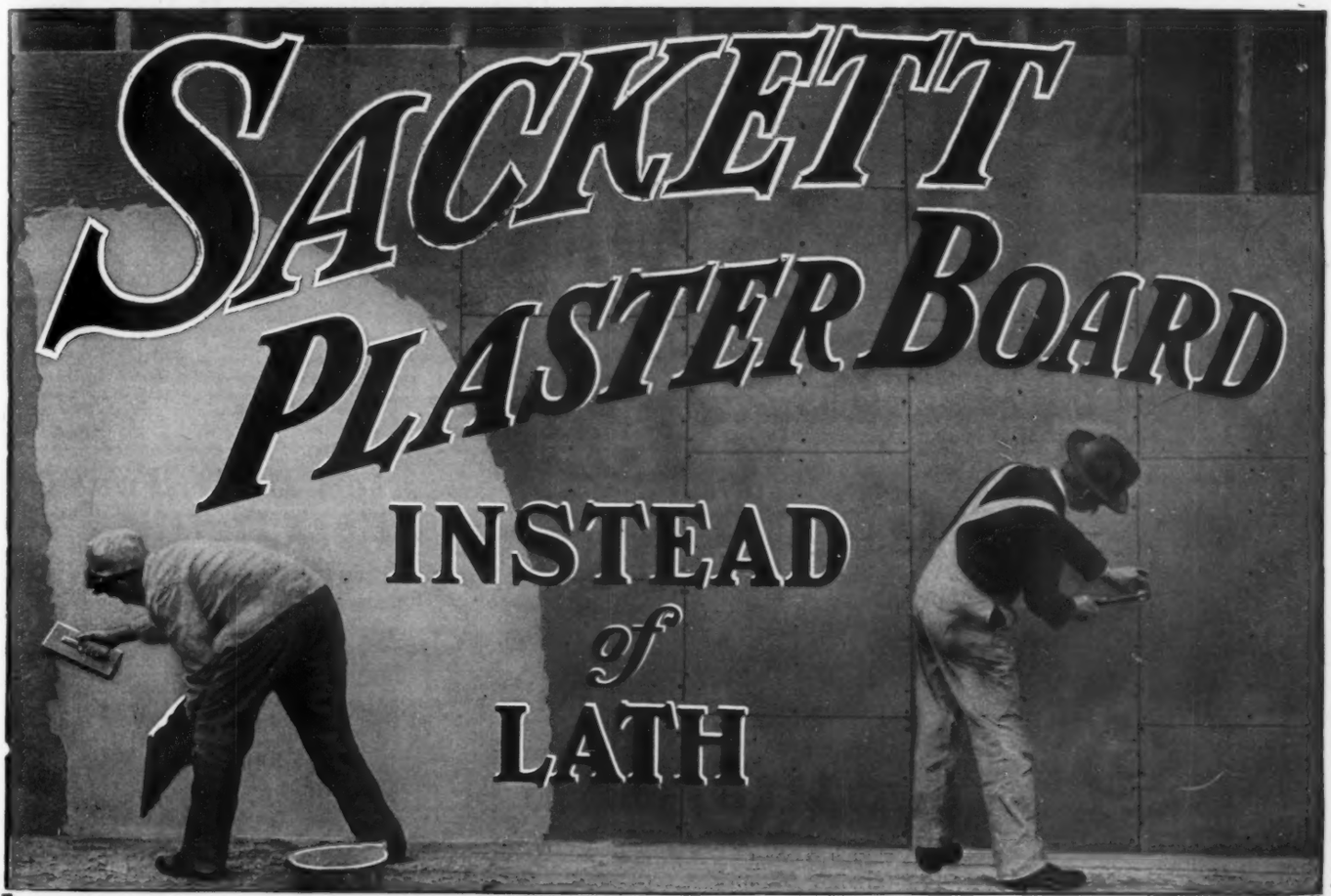
"Universal"—The New Finish without Lime and Lime Troubles.
Sackett Plaster Board—"Instead of Lath," Fireproof, Economical.
Gypsinite Studding—Latest advance in Building Material.
Cementico—Decorative Wall Finish. Better than Calcimine.

"And We're Still Progressing."

"Want a Boost?" Write us, briefly, something of your trade requirements, and see what we have to offer. Ask for "The New Red Book for Plasterers." Write right now. (Address our nearest office).

United States Gypsum Co.

New York Cleveland Chicago Minneapolis San Francisco



FIREPROOF AND ECONOMICAL

SACKETT PLASTER BOARDS have been successfully used since 1891 in thousands of buildings of all classes, including small cottages, prominent hotels, costly residences, churches and theaters.

Walls and ceilings of Sackett Plaster Boards will be **DRY AND READY IN HALF THE TIME** required when lath is used, as less than half the quantity of water is needed.

Less moisture means **less damage** from warped and twisted trim and woodwork.

Their superior insulating qualities make warmer houses with less fuel. The first cost is **no more** than good work on wood lath, and **less** than on metal lath.

Sackett Plaster Board is an efficient and economical FIREPROOFING not only for walls but between floors, and for protecting exposed wooden surfaces in mills, warehouses and industrial structures. It is also used extensively instead of lumber as outside sheathing under weather boards.

Sackett Plaster Board comes in sheets or slabs 32x36 inches ready to be nailed direct to the studding, furring or beams.

For all kinds of Buildings its use is ideal. It speeds construction; it lessens building cost; it reduces fixed charges for insurance; it makes fire resisting walls and ceilings, and gives absolute satisfaction.

Carried in stock by **up-to-date building material dealers** everywhere.

Booklet showing buildings all over the country where these boards have been successfully used with SAMPLES and name of nearest dealer furnished on application to any of the following General Distributors.

UNITED STATES GYPSUM CO.
CHICAGO CLEVELAND MINNEAPOLIS

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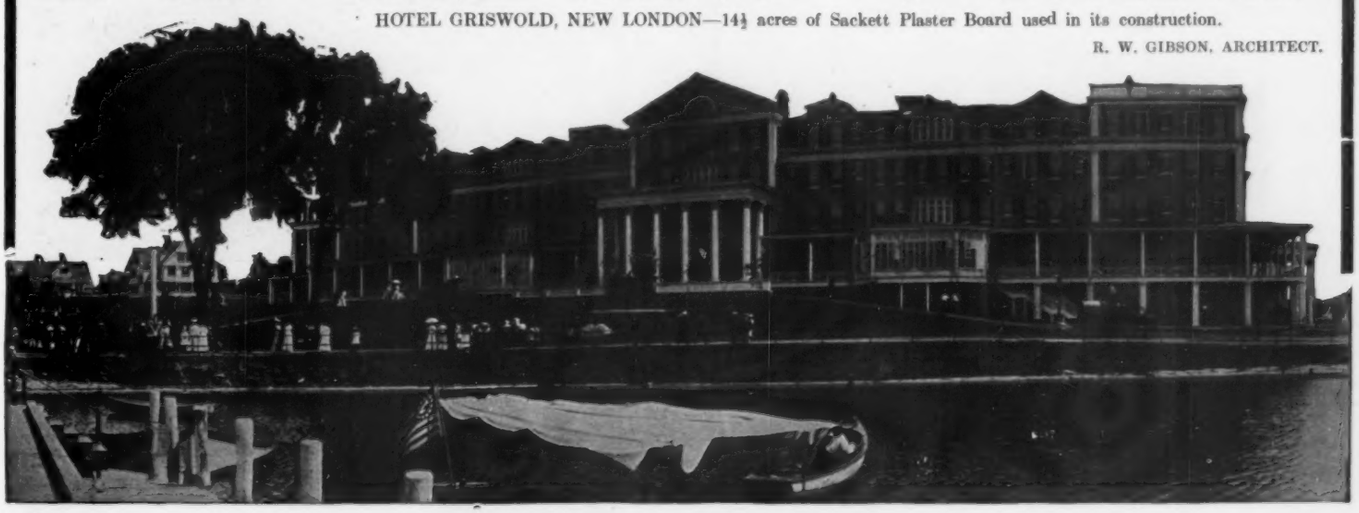
SACKETT PLASTER BOARD CO.
17 BATTERY PLACE, NEW YORK CITY

HOTEL GRISWOLD, NEW LONDON—14½ acres of Sackett Plaster Board used in its construction.

R. W. GIBSON, ARCHITECT.



FARREL ORE AND ROCK CRUSHER

USED IN ALL PARTS OF THE WORLD—LARGE RECEIVING CAPACITY—SPECIALLY DESIGNED AND CONSTRUCTED FOR HARDEST KIND OF WORK

COMPLETE CRUSHING PLANTS OUR SPECIALTY

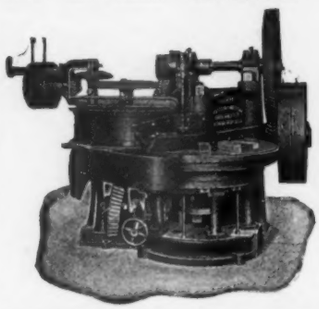
• SEND FOR CATALOGUE •

EARLE C. BACON, ENGINEER.

FARREL FOUNDRY & MACHINE Co. HAVEMEYER BUILDING, NEW YORK

The American Sandstone Brick Machinery Company,

SAGINAW, MICH.



Improved Saginaw Rotary Presses are now being built right or left hand, with extra table for making face and fancy brick, on which double pressure is exerted. Our patented brush does the work of one man, and keeps the plunger plates clean.

DON'T confuse our practical system with the so-called Scientific Systems. We confine ourselves to the manufacture of machinery for making brick from sand and lime; installing the complete plant starting and operating at our expense until at least 100,000 brick are made before asking for a settlement.

Our Plants are installed under the supervision of practical engineers who know how Sand-Lime Brick should be made, and can be made.

We have practical plants running successfully, to show to prospective investors.

We are Not Scientists.

We produce results, because **we are the oldest practical Sand-Lime engineering company doing business in the United States,** and **we defy contradiction.** Incorporated April 1902.

HOWELL'S Celebrated Ball Bearing Heavy Geared Post Drills

For boring anything that an Auger will penetrate.

Awarded Gold Medal, St. Louis.

We make 40 different styles machines run by Hand, Compressed Air and Electricity for boring Fire Clay, Coal, Rock, Rock Salt, Gypsum and Plaster Rock. Send to day for our handsomely Illustrated Catalogue.

HOWELL MINING DRILL CO., PLYMOUTH, PA., U. S. A.

(ESTABLISHED 1878.)

Modern Grinding Machinery

KOMINUTERS for Granulating
TUBEMILLS for Pulverizing

Davidsen Tubemill especially adapted for Sand-Lime Brick Work

Silex Linings for Tubemills
Best Quality Dana Flint Pebbles
Forged Steel Balls

F. L. SMIDTH & CO.

ENGINEERS

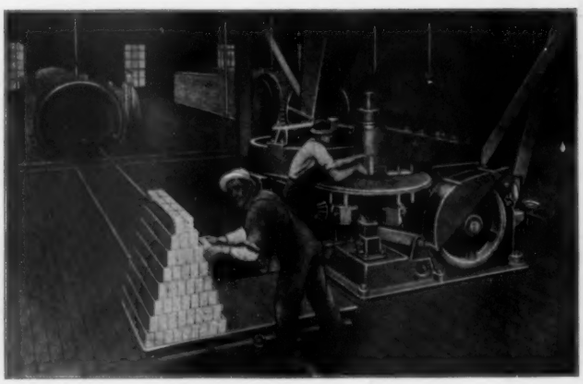
41 Cortlandt St. NEW YORK

The Cleveland Brick Machinery Co.

Wickliffe, Ohio.

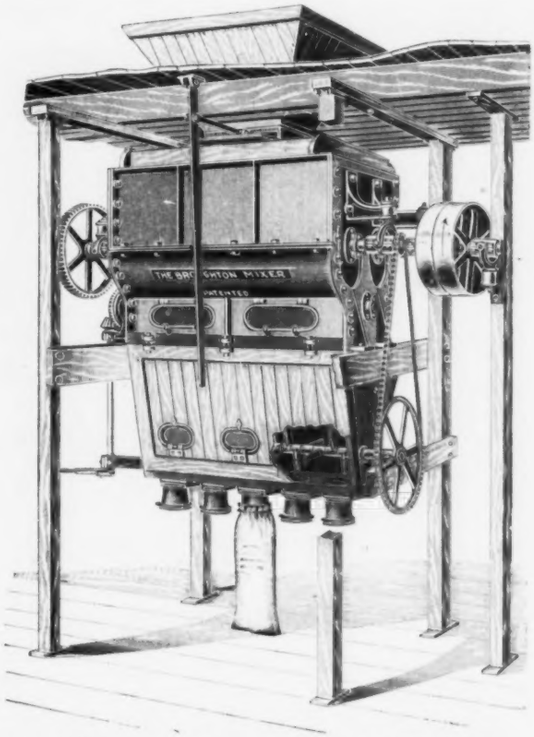
Manufacturers of

Sand Lime Brick Machinery Only



We claim to have the finest Sand Lime Brick Press that has yet been brought out, and we are sure we can convince you if you will see our machinery in operation.

Designers and Builders of Sand Lime Brick Plants.



The most thorough and efficient Mixers of Plaster, Cement and Dry Materials. Send for Circular.

W. D. DUNNING, Water St., **Syracuse, N.Y.**

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"Century" Rubber Belt Conveyors

for handling clay, stone, coal, gravel, sand, material in package or other forms.

Complete Mine Equipments, Electric Locomotives, Coal Cutters, Screens, Drills, Crushers, Pumps, Fans, Cages, Car Hoists, Etc.

The Jeffrey Mfg. Co.

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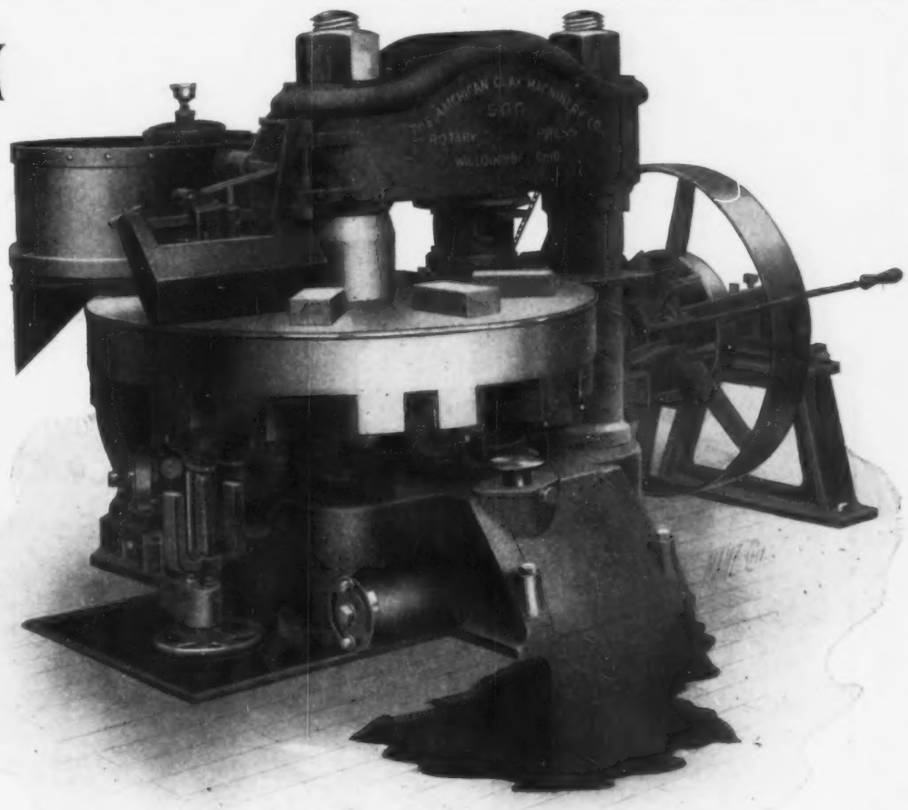
Sand-Lime Brick Machinery

OUR Sand-Lime Brick Machinery is at least a little better than any other. We have testimonials to show it. We build it all in our own factory and are sure of its quality. We are the only firm doing this. We will design and equip your entire plant or will sell you parts of your equipment. Our catalog describing and illustrating our full line will be sent upon request.

We also build a full line of machinery and appliances for making Clay Products, Cement and Pottery, Dryers and Dryer Apparatus.

Everything we sell we make. We therefore know its quality to be right.



The American Clay Machinery Company

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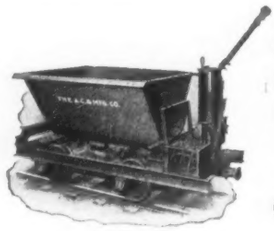
WE BUILD **CARS** FOR



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Side Dump Car
Equipped with Motor

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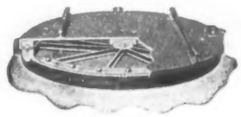

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Pressed Steel Top, Ball Bearing Turntable; Patented

SWITCHES, FROGS

RAIL, TURNTABLES

No. 600
Steel Dumping Bucket

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The Prize Winning Brand

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